

ONS-QSFP28-LR4-CW29-C

Cisco® ONS ONS-QSFP28-LR4-CW29 Compatible TAA 100GBase-CWDM QSFP28 Transceiver Single Lambda (SMF, 1290nm, 10km w/FEC, LC, DOM)

Features:

- Supports 100Gbps
- 100G Lambda MSA 100G-LR Specification Compliant
- Single 3.3V Power Supply
- Power Dissipation < 4.5W
- Up to 10km over SMF with FEC
- QSFP28 MSA Compliant
- SFF-8636 Rev 2.10a Compliant
- 4x25G Electrical Interface
- LC Duplex Connector
- Operating Case Temperature: 0C to 70C
- I2C Interface with Integrated Digital Diagnostic Monitoring
- RoHS compliant



Applications:

- 100GBase Ethernet over CWDM
- Access, Metro and Enterprise

Product Description

This Cisco® ONS ONS-QSFP28-LR4-CW29 compatible QSFP28 transceiver provides 100GBase-CWDM throughput up to 10km over single-mode fiber (SMF) using a wavelength of 1290nm via an LC connector. It is guaranteed to be 100% compatible with the equivalent Cisco® ONS 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.

ProLabs' 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."



CWDM Available Wavelengths

| Wavelengths | Min. | Typ. | Max. |
|-------------|--------|------|--------|
| 27 | 1264.5 | 1271 | 1277.5 |
| 29 | 1284.5 | 1291 | 1297.5 |
| 31 | 1304.5 | 1311 | 1317.5 |
| 33 | 1324.5 | 1331 | 1337.5 |

Absolute Maximum Ratings

| Parameter | Symbol | Min. | Typ. | Max. | Unit |
|-----------------------------|--------|------|------|------|------|
| Maximum Supply Voltage | Vcc | -0.5 | | 4.0 | V |
| Storage Temperature | TS | -40 | | +85 | °C |
| Operating Case Temperature | Tc | 0 | | 70 | °C |
| Operating Relative Humidity | RH | 5 | | 85 | % |
| Damage threshold | Rxdmg | 5.5 | | | dBm |

Electrical Characteristics

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Notes |
|--|--------|-------|------|-------|-------|-------------|
| Power Supply Voltage | Vcc | 3.135 | 3.3 | 3.465 | V | |
| Power Dissipation | PD | | | 4.5 | W | |
| Transmitter | | | | | | |
| Differential data input swing per lane | | 900 | | | mVp-p | |
| Differential input impedance | Zin | 90 | 100 | 110 | ohm | |
| DC common mode voltage (Vcm) | | -350 | | 2850 | mV | |
| Receiver | | | | | | |
| Differential output amplitude | | | | 900 | mVp-p | |
| Differential output impedance | Zout | 90 | 100 | 110 | ohm | |
| Output Rise/Fall Time | tr/tf | 12 | | | ps | 20%~80% |
| AC Common Mode Output Voltage | | | | 7.5 | mV | |
| Eye width | | 0.57 | | | UI | |
| Eye height differential | | 228 | | | mV | @TP4, 1E-15 |
| DC common mode voltage (Vcm) | | -350 | | 2850 | mV | 1 |

Notes:

1. Vcm is generated by the host. Specification includes effects of ground offset voltage.

Optical Characteristics

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Notes |
|--|-----------|-------------------|-------------|---------------------|-------|-------|
| Transmitter | | | | | | |
| Signaling speed | | | 53.125 | | Gbaud | |
| Modulation format | | PAM4 | | | | |
| Optical center wavelength | λ | $\lambda_c - 6.5$ | λ_c | $\lambda_c + 6.5$ | nm | |
| Side-mode suppression ratio | SMSR | 30 | | | dB | |
| Extinction ratio | ER | 3.5 | | | dB | |
| Transmit OMA | TxOMA | 0.7 | | 4.7 | dBm | |
| Transmit average | TxAVG | -1.4 | | 4.5 | dBm | 1 |
| Launch power in OMA _{outer} minus TDECQ | | -0.7 | | | dBm | 2 |
| Launch power in OMA _{outer} minus TDECQ | | -0.6 | | | dBm | 3 |
| Transmitter and dispersion eye closure | TDECQ | | | 3.4 | dB | |
| Optical return loss tolerance | | | | 15.6 | dB | 4 |
| Receiver | | | | | | |
| Signaling speed | | | 53.125 | | Gbaud | |
| Damage threshold | | 5.5 | | | dBm | |
| Receive power (OMA _{outer}) | RxOMA | | | 4.7 | dBm | |
| Average receive power | RxAVG | -7.7 | | 4.5 | dBm | |
| Receiver sensitivity (OMA _{outer}) | SenOMA | | | Max(-6.1, SECQ-7.5) | dBm | 5 |
| Receiver reflectance | | | | -26 | dB | |
| LOS assert | LOSA | -15 | | | dBm | |
| LOS De-assert | LOSD | | | -12 | dBm | |
| LOS hysteresis | | 0.5 | | | dB | |

Notes:

1. Average launch power (min) is informative and not the principal indicator of signal strength. A transmitter with launch power below this value cannot be compliant; however, a value above this does not ensure compliance.
2. For $ER \geq 4.5\text{dB}$
3. For $ER < 4.5\text{dB}$
4. Transmitter reflectance is defined looking into the transmitter.
5. Sensitivity is specified at 2.4×10^{-4} BER.

Pin Descriptions

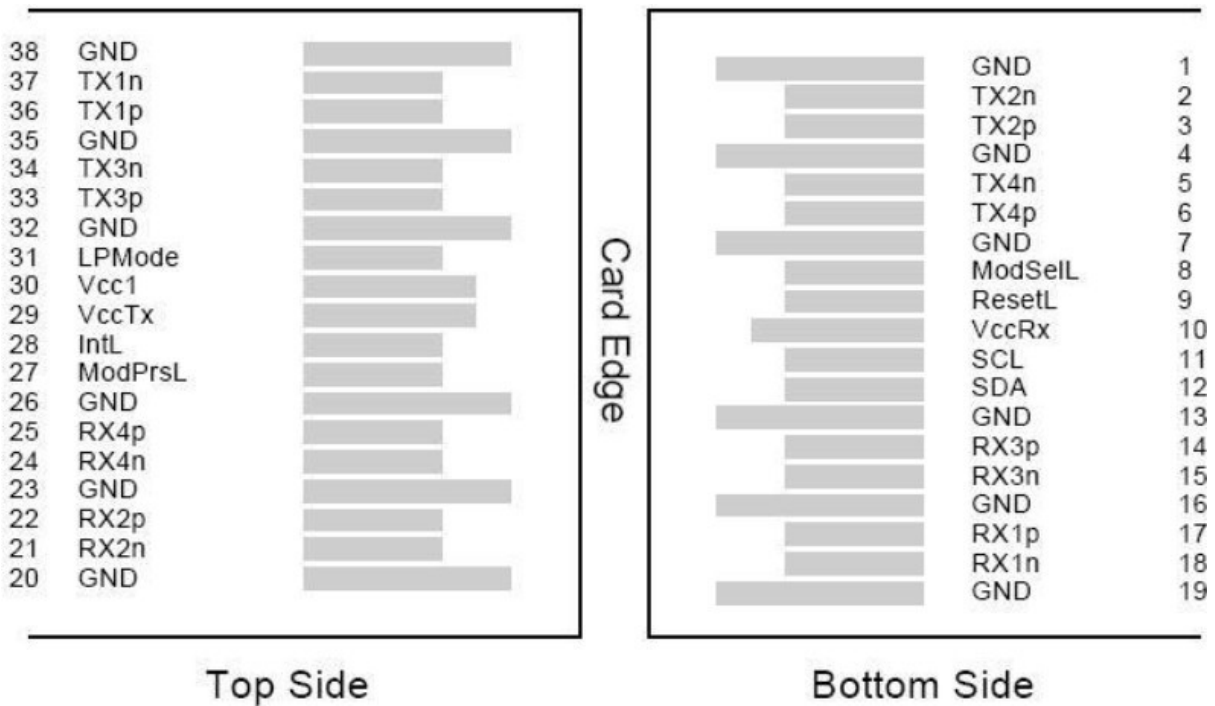
| Pin | Symbol | Name/Descriptions | Ref. |
|-----|---------|--|------|
| 1 | GND | Transmitter Ground (Common with Receiver Ground) | 1 |
| 2 | Tx2- | Transmitter Inverted Data Input | |
| 3 | Tx2+ | Transmitter Non-Inverted Data output | |
| 4 | GND | Transmitter Ground (Common with Receiver Ground) | 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 | 1 |
| 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 power supply transmitter | |
| 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 |

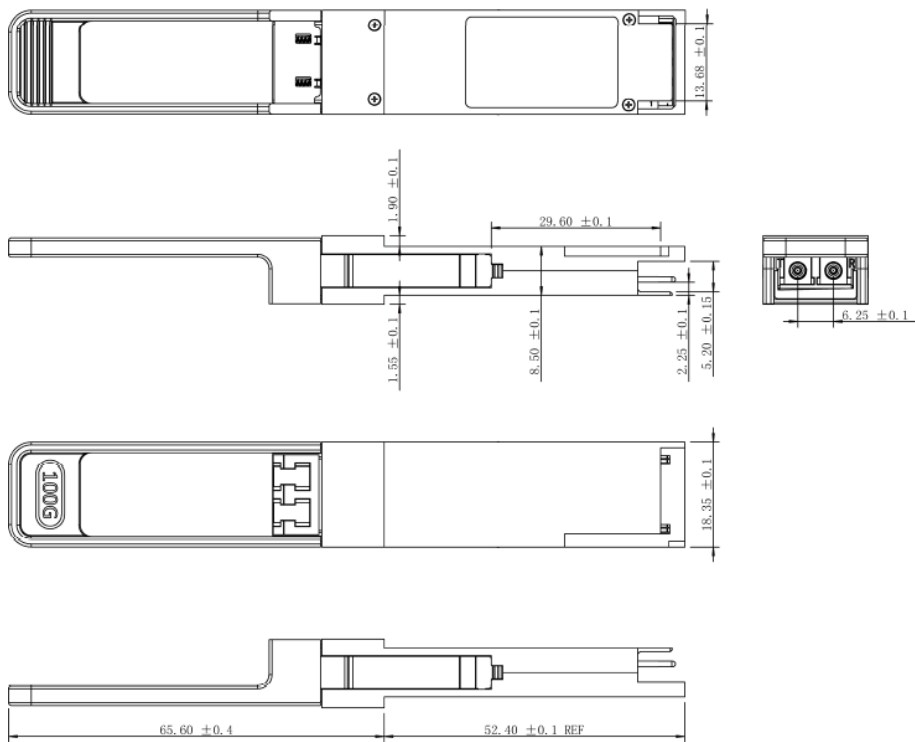
Notes:

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 Ω to 10K Ω pull-up resistor to VccHost.

Electrical Pin-out Details



Mechanical Specifications



About ProLabs

Our experience comes as standard; for over 15 years ProLabs has delivered optical connectivity solutions that give our customers freedom and choice through our ability to provide seamless interoperability. At the heart of our company is the ability to provide state-of-the-art optical transport and connectivity solutions that are compatible with over 90 optical switching and transport platforms.

Complete Portfolio of Network Solutions

ProLabs is focused on innovations in optical transport and connectivity. The combination of our knowledge of optics and networking equipment enables ProLabs to be your single source for optical transport and connectivity solutions from 100Mb to 400G while providing innovative solutions that increase network efficiency. We provide the optical connectivity expertise that is compatible with and enhances your switching and transport equipment.

Trusted Partner

Customer service is our number one value. ProLabs has invested in people, labs and manufacturing capacity to ensure that you get immediate answers to your questions and compatible product when needed. With Engineering and Manufacturing offices in the U.K. and U.S. augmented by field offices throughout the U.S., U.K. and Asia, ProLabs is able to be our customers best advocate 24 hours a day.



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