

QSFP-100GB-131143-20-E-C-PRO

Cisco® Compatible TAA Compliant 100GBase-OWDM 400GHz QSFP28 Transceiver (SMF, 1311.43nm, 20km, DOM, -5 to 80C, LC)

Features

- Hot-pluggable QSFP28 form factor
- Supports 106.25Gb/s (PAM4)
- Compliant with QSFP28 MSA
- High Sensitivity APD Receiver
- OWDM 8 Wavelengths
- Duplex LC receptacles
- Aligned with IEEE 802.3bs and 100G Lambda MSA
- Single +3.3V power supply
- Operating temperature: -5 to +80 Celsius
- I2C management interface
- RoHS Compliant and Lead-Free



Applications:

- 100GBase Ethernet
- Access and Enterprise

Product Description

This Cisco® QSFP28 transceiver provides 100GBase-OWDM throughput up to 20km over single-mode fiber (SMF) using a wavelength of 1311.43nm 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.

Proline'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.



Absolute Maximum Ratings

| Parameter | Symbol | Min. | Max. | Unit |
|-------------------------------------|--------|------|------|------|
| Maximum Supply Voltage | Vcc | 0 | 3.6 | V |
| Storage Temperature | Tstg | -40 | 85 | °C |
| Operating Case Temperature | Tc | -5 | 80 | °C |
| Relative Humidity (No Condensation) | RH | 0 | 85 | % |
| Damage Threshold | THd | 0 | | dBm |
| Link Distance Through Mux | D | | 20 | km |
| Link Distance Back-to-Back | D | | 40 | km |

Electrical Characteristics

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Notes |
|--|--------|-------------------|---|---|------|--------|
| Supply Voltage | Vcc | 3.135 | 3.3 | 3.465 | V | |
| Supply Current | Icc | | | 1.8 | A | |
| Power Consumption | | | 4.7 at -5°C 4.4 at 25°C 5.2 at 80°C | 5.0 at -5°C 4.8 at 25°C 5.5 at 80°C | W | |
| Transmitter High-Speed Electrical Characteristics | | | | | | |
| Signaling Rate | Rate | 25.78125±100ppm | | | Gbps | |
| Input Differential Impedance | ZIN | | 100 | | Ω | |
| Differential Input Voltage Per Lane | | | | 900 | mV | |
| Input Impedance Mismatch | | | | 10 | % | |
| Input High Voltage | VIH | 2 | | Vcc+0.3 | V | |
| Input Low Voltage | VIL | -0.3 | | 0.8 | V | |
| Receiver High-Speed Electrical Characteristics | | | | | | |
| Signaling Rate | Rate | 25.78125 ± 100ppm | | | Gbps | |
| Common-Mode Voltage | Vcm | -350 | | 2850 | mV | |
| Common-Mode Noise (RMS) | | | | 17.5 | mV | 20-80% |
| Differential Termination Resistance Mismatch (At 1MHz) | | | | 10 | % | |
| Differential Return Loss (SDD22) | | | | Per CEI-28G-VSR | dB | |
| Common-Mode to Differential Conversion and Differential to Common-Mode Conversion (SDC22, SCD22) | | | | Per CEI-28G-VSR | dB | |
| Common-Mode Return Loss (SCC22): From 250MHz to 30GHz | | | | -2 | | |

| | | | | | | |
|---|------|------|--|-----|----|--|
| Transition Time (20-80%) | | 9.5 | | | ps | |
| Vertical Eye Closure | VEC | | | 6.5 | dB | |
| Eye Width at 10 ⁻¹⁵ Probability | EW15 | 0.57 | | | UI | |
| Eye Height at 10 ⁻¹⁵ Probability | EH15 | 228 | | | mV | |

Optical Characteristics (EOL)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Notes |
|--|-----------|-----------------|---------|-------------------------|-------|-------|
| Transmitter | | | | | | |
| Data Rate Per Lane | | 53.125 ± 100ppm | | | Gbps | |
| Modulation Format | | PAM4 | | | | |
| Wavelength | λ | 1311.03 | 1311.43 | 1311.83 | nm | |
| Side-Mode Suppression Ratio | SMSR | 30 | | | dB | |
| Average Launch Power | Pavg | 0 | | 3.4 | dBm | 1 |
| Outer Optical Modulation Amplitude (OMA _{outer}) | TDP<1.4dB | POMA | 3.0 | 6.4 | dBm | |
| | TDP>1.4dB | | 1.6+TDP | 6.4 | dBm | |
| Transmitter and Dispersion Penalty | TDP | | | 3.4 | dB | |
| TECQ | TECQ | | | 3.9 | dB | |
| TDP-TECQ (Maximum) | | | | 2.5 | dB | |
| Extinction Ratio | ER | 5.0 | | | dB | |
| Optical Return Loss Tolerance | ORLT | | | 15.6 | dB | |
| Transmitter Reflectance | RL | | | -26 | dB | 2 |
| Average Launch Power Off Transmitter | Poff | | | -15 | dBm | |
| RIN _{15.6OMA} | RIN | | | -136 | dB/Hz | |
| Receiver | | | | | | |
| Data Rate Per Lane | | 53.125 ± 100ppm | | | Gbps | |
| Modulation Format | | PAM | | | | |
| Lane Wavelength | λ | 1295.04~1311.96 | | | nm | |
| Damage Threshold | THd | 0 | | | dBm | 3 |
| Average Receive Power | | -15.7 | | -3 | dBm | 4 |
| Receive Power (OMA _{outer}) | | | | -2.6 | dBm | |
| Receiver Reflectance | RL | | | -26 | dB | |
| Receiver Sensitivity (OMA _{outer}) | | | | Max. (-14.0, SECC-15.4) | dBm | 5, 6 |
| Stressed Receiver Sensitivity (OMA _{outer}) Per Lane (Maximum) | SRS | | | -11.6 | dBm | |
| Transmitter Reflectance | RL | | | -26 | dB | |

| | | | | | | |
|---|------|-----|--|-------|-----|--|
| LOS Assert | LOSA | -30 | | -19.5 | dBm | |
| LOS De-Assert | LOSD | | | -16.5 | dBm | |
| LOS Hysteresis | LOSH | 0.5 | | | dB | |
| Conditions of Stress Receiver Sensitivity Test | | | | | | |
| Stressed Eye Closure for PAM4 (SECQ) Lane Under Test | | | | 3.4 | dB | |
| SECQ – 10*log10 (Ceq) Lane Under Test | | | | 3.4 | dB | |

Notes:

1. Average launch power (minimum) 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. Transmitter Reflectance is defined looking into the transmitter.
3. The receiver shall be able to tolerate, without damage, continuous exposure to a modulated optical input signal having this power level on one lane.
4. Average receive power (minimum) is informative and not the principal indicator of signal strength. A received power below this value cannot be compliant; however, a value above this does not ensure compliance.
5. Receiver Sensitivity (OMA_{outer}) (maximum) is informative and is defined for a transmitter with a value of SECQ up to 3.4dB for 100G ER1 O-Band WDM.
6. Measured with a conformance test signal at TP3 (see 3.11) for the BER specified in IEEE Std 802.3.

Pin Descriptions

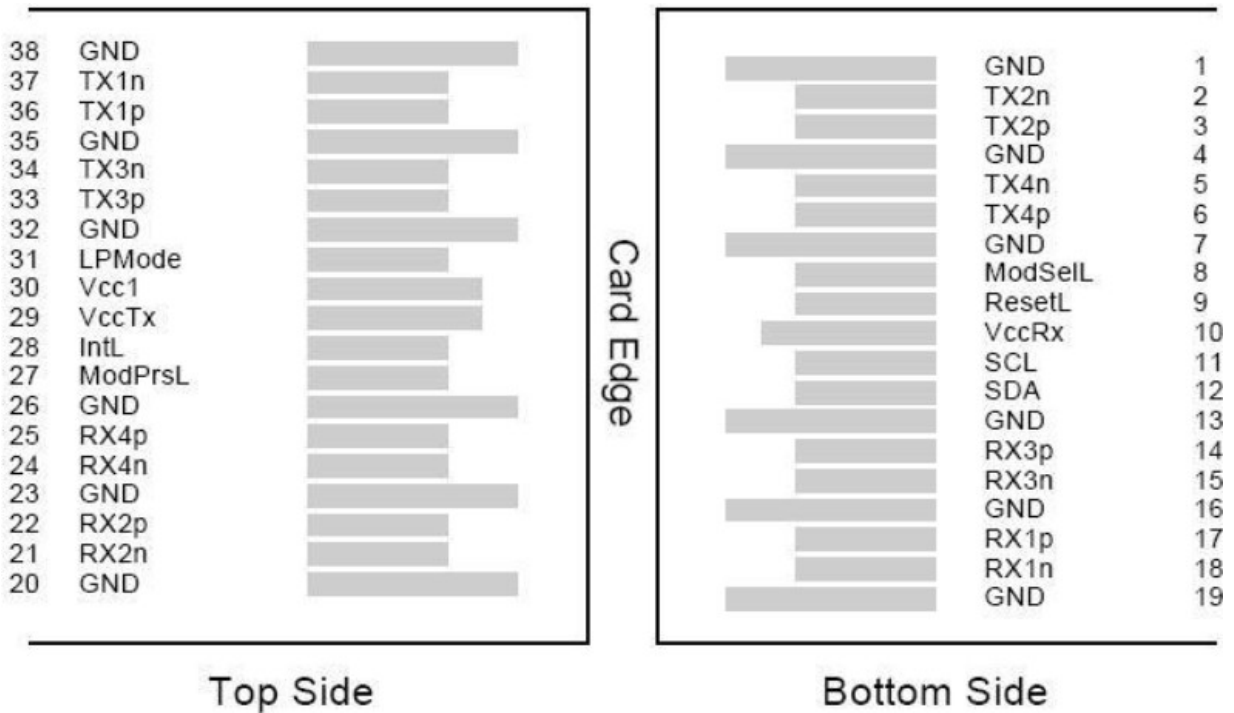
| Pin | Symbol | Name/Descriptions | Notes |
|-----|---------|---|-------|
| 1 | GND | Transmitter Ground (Common with Receiver Ground). | 1 |
| 2 | Tx2- | Transmitter Inverted Data Input. | |
| 3 | Tx2+ | Transmitter Non-Inverted Data Output. | |
| 4 | GND | Transmitter Ground (Common with Receiver 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 |

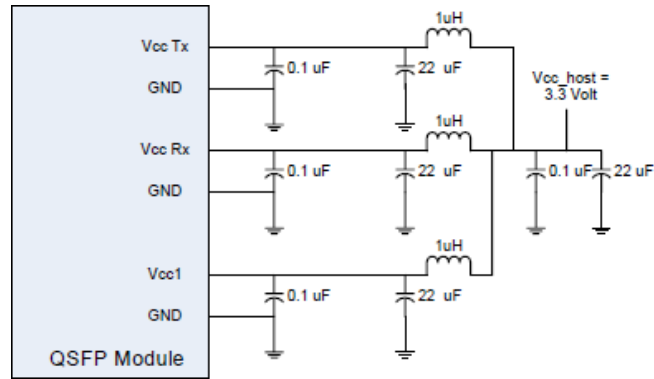
Notes:

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 4.7kΩ to 10kΩ pull-up resistor to Host_Vcc.

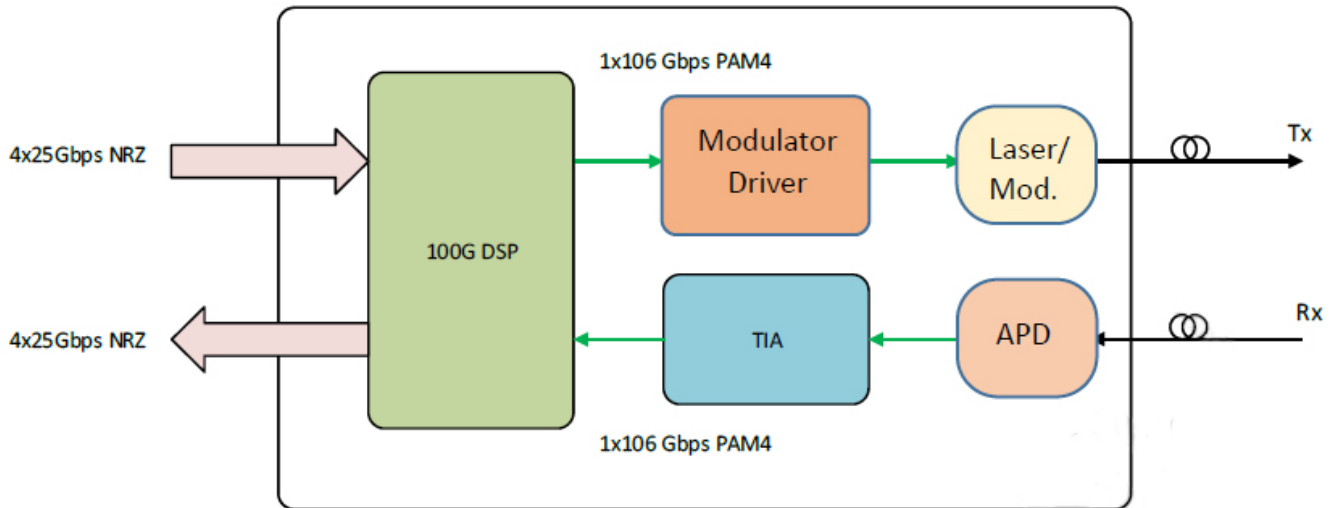
Electrical Pin-Out Details



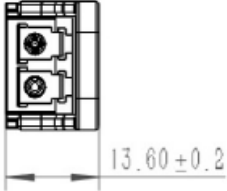
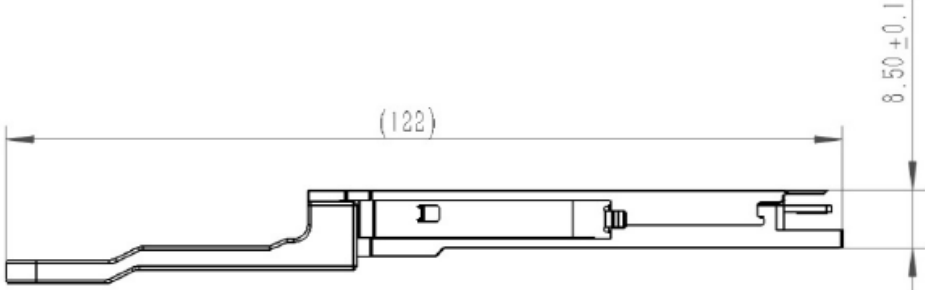
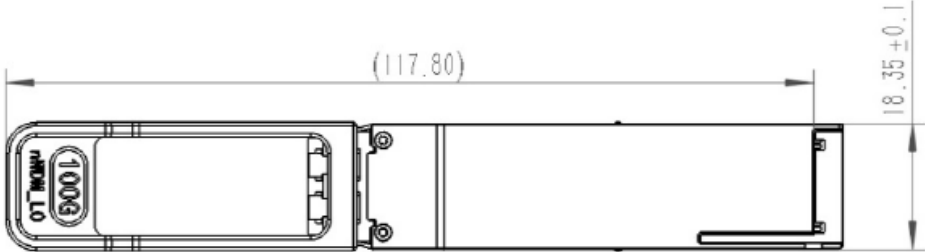
Recommended Host Board Power Supply Filter Network



Block Diagram



Mechanical Specifications



About Us:

Proline Options is one of North America's leading providers of transceivers and high speed cabling. With a reputation for quality, tested products that cover the connectivity spectrum, Proline Options has a solution for you regardless of the specification.

At Proline Options, every product is tested in its intended application - never batch or spec tested only. We run bandwidth, distance and IOS network tests. We have documented an impressive 0.03% failure rate over the last 10 years. To continue this rate of success we invest millions annually in our own on-site testing lab.



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