

160-9506-900-C

Ciena® 160-9506-900 Compatible TAA 40GBase-PLR4 QSFP+ Transceiver (SMF, 1310nm, 10km, MPO, DOM)

Features:

- SFF-8436 Compliance
- MPO 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:

- 40GBase Ethernet
- Access and Enterprise

Product Description

This Ciena® 160-9506-900 compatible QSFP+ transceiver provides 40GBase-PLR4 throughput up to 10km over single-mode fiber (SMF) using a wavelength of 1310nm via an MPO connector. It is guaranteed to be 100% compatible with the equivalent Ciena® 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."



Absolute Maximum Ratings

| Parameter | Symbol | Min. | Typ. | Max. | Unit |
|----------------------------|-----------------|------|---------|------|------|
| Supply Voltage | V _{CC} | -0.5 | | 4.0 | V |
| Storage Temperature | T _s | -40 | | 85 | °C |
| Operating Case Temperature | T _c | 0 | 25 | 70 | °C |
| Relative Humidity | RH | 5 | | 95 | % |
| Data Rate Per Channel | | | 10.3125 | 11.2 | Gb/s |

Electrical Characteristics

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Notes | |
|----------------------------------|---------------------------------|-------|------|-------|---------------------|-------|---|
| Supply Voltage | V _{CC} | 3.135 | 3.3 | 3.465 | V | | |
| Module Supply Current | I _{CC} | | | 1100 | mA | | |
| Power Dissipation | P _D | | | 3500 | mW | | |
| Transmitter | | | | | | | |
| Input Differential Impedance | Z _{IN} | | 100 | | | | |
| Differential Data Input Swing | V _{IN, P-P} | 180 | | 900 | mV _{P-P} | | |
| TX_FAULT | Transmitter Fault | VOH | 2.0 | | V _{CCHOST} | V | |
| | Normal Operation | VOL | 0 | | 0.8 | V | |
| TX_DISABLE | Transmitter Disable | VIH | 2.0 | | V _{CCHOST} | V | |
| | Transmitter Enable | VIL | 0 | | 0.8 | V | |
| Receiver | | | | | | | |
| Output Differential Impedance | Z _O | | 100 | | | | |
| Differential Data Output Swing | V _{OUT, P-P} | 300 | | 850 | mV _{P-P} | 1 | |
| Data Output Rise Time, Fall Time | t _r , t _f | 28 | | | ps | 2 | |
| RX_LOS | Loss of signal (LOS) | VOH | 2.0 | | V _{CCHOST} | V | 3 |
| | Normal Operation | VOL | 0 | | 0.8 | V | 3 |

Notes:

1. Internally AC coupled, but requires an external 100 differential load termination.
2. 20 – 80 %.
3. LOS is an open collector output. Should be pulled up with 4.7k on the host board.

Optical Characteristics

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Notes |
|-------------------------------|------------------|------|------|-------|------|-------|
| Transmitter | | | | | | |
| Launch Optical Power per lane | P _o | -8.2 | | +0.5 | dBm | 1 |
| Side Mode Suppression Ratio | SMSR | 30 | | | dB | |
| Center Wavelength Range | λ ₀ | 1260 | 1310 | 1355 | nm | |
| Extinction Ratio | EX | 3.5 | | | dB | 2 |
| Optical Return Loss Tolerance | ORLT | | | 12 | dB | |
| Pout @TX-Disable Asserted | P _{off} | | | -30 | dBm | 1 |
| Receiver | | | | | | |
| Center Wavelength | λ _c | 1260 | | 1355 | nm | |
| Receiver Sensitivity (OMA) | S | | | -12.6 | dBm | 3 |
| Damage Threshold | P _{OL} | 1.5 | | | dBm | 3 |
| LOS De-Assert | LOSD | | | -15 | dBm | |
| LOS Assert | LOSA | -30 | | | dBm | |
| LOS Hysteresis | | 0.5 | | | dB | |

Note:

1. The optical power is launched into SMF.
2. Measured with a PRBS $2^{31}-1$ test pattern @10.3125Gbps.
3. Measured with PRBS $2^{31}-1$ test pattern, 10.3125Gb/s, BER< 10^{-12} .

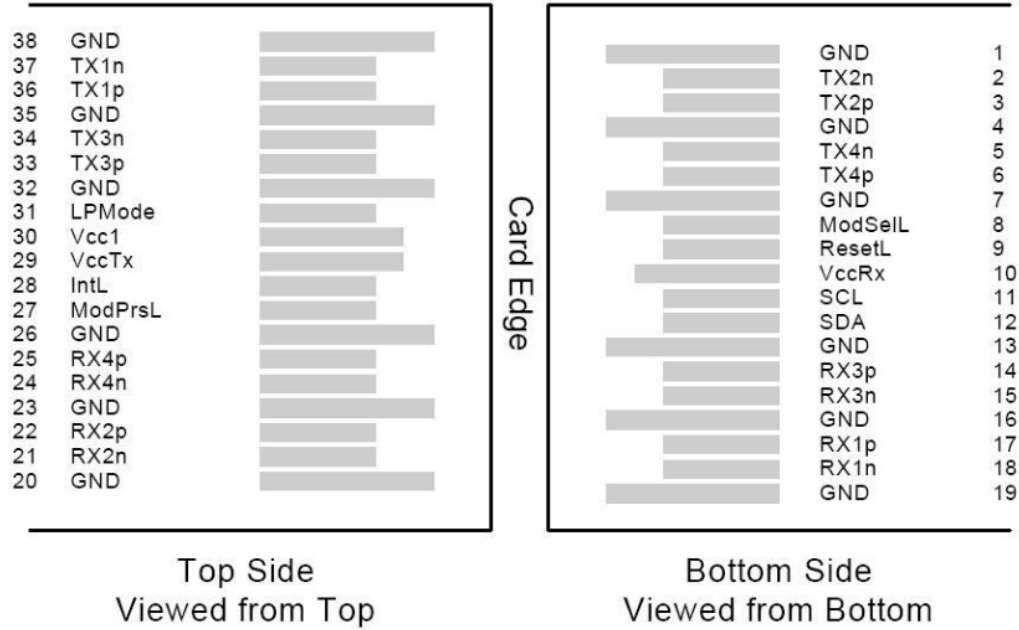
Pin Descriptions

| 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 | LVTTTL-I | MODSEIL | Module Select | 2 |
| 9 | LVTTTL-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 | LVTTTL-O | ModPrsL | Module Present, internal pulled down to GND | |
| 28 | LVTTTL-O | IntL | Interrupt output should be pulled up on host board | 2 |
| 29 | | VCCTx | +3.3v Transmitter Power Supply | |
| 30 | | VCC1 | +3.3v Power Supply | |
| 31 | LVTTTL-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 |

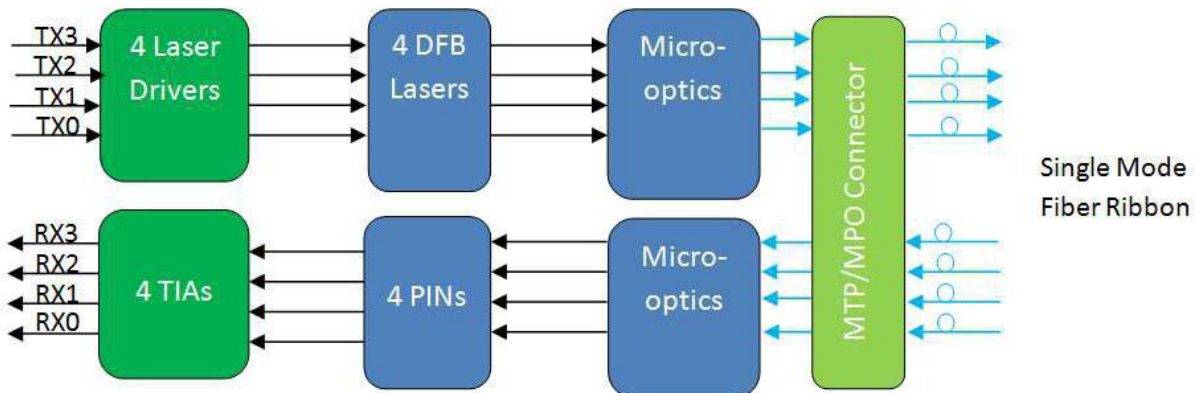
Notes:

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

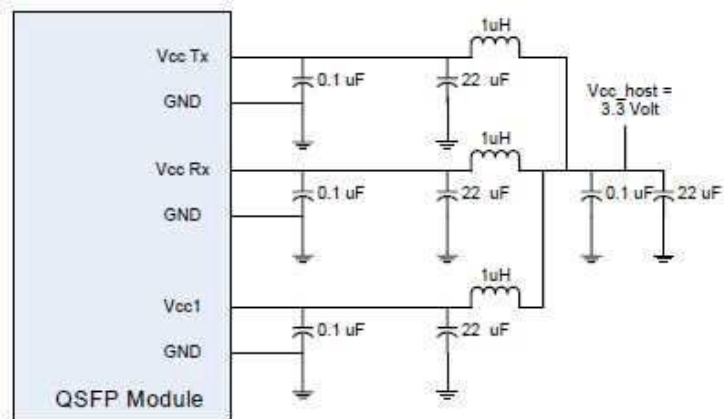
Electrical Pin-out Details



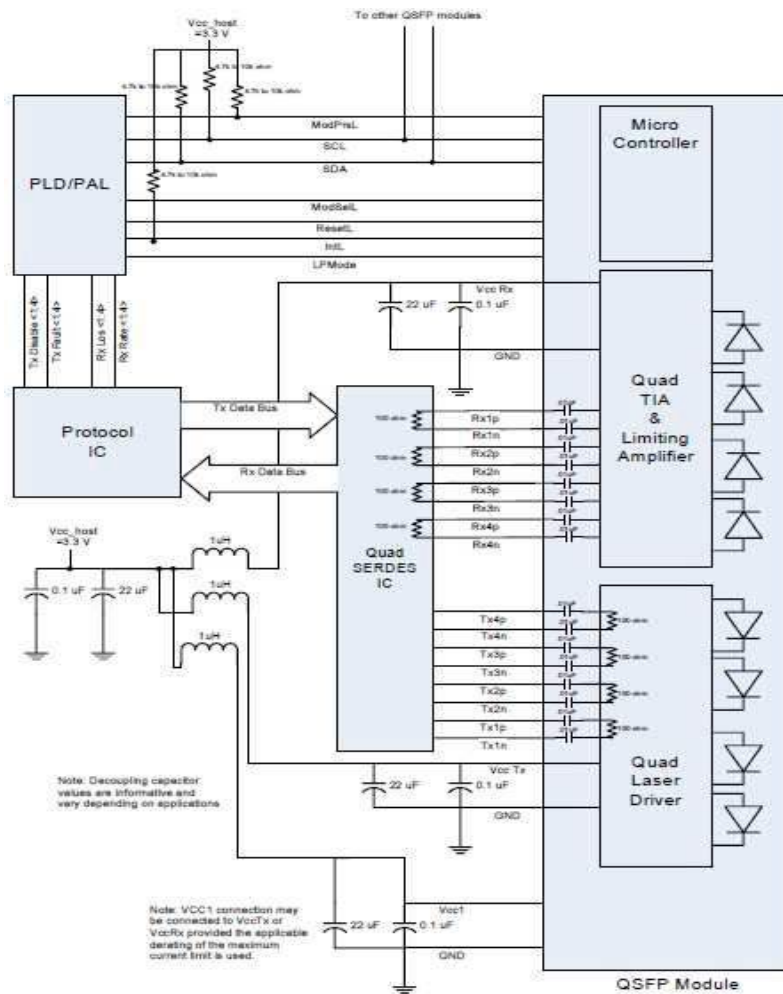
Transceiver Diagram Block



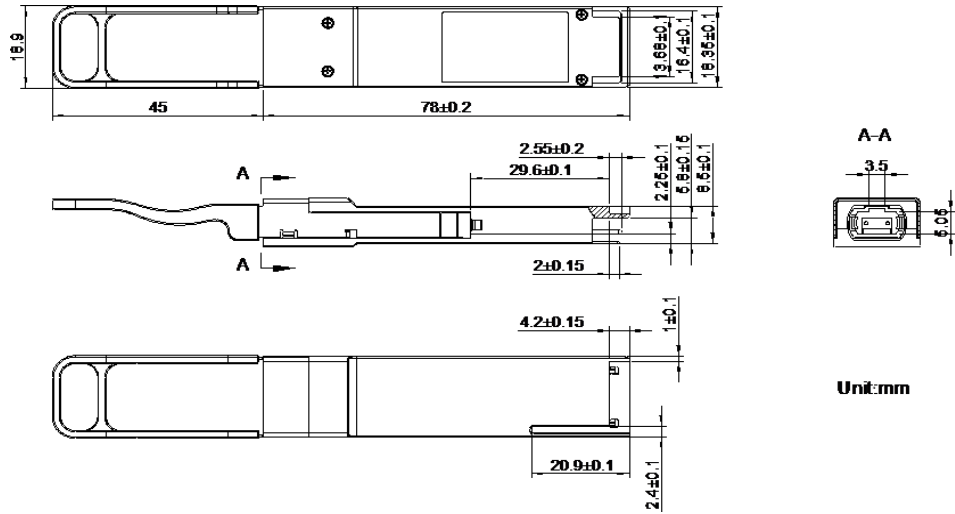
Recommended Host Board Power Supply Filter Network



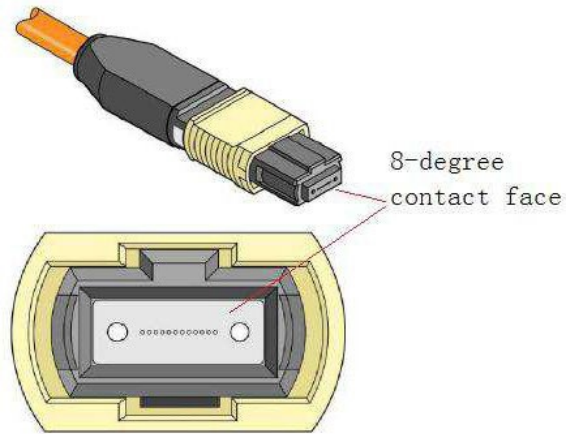
Recommended Application Interface Block Diagram



Mechanical Specifications



Attention: To minimize MPO connection induced reflections, an MPO receptacle with 8-degree angled end-face is utilized for this product. A female MPO connector with 8-degree end-face should be used with this product as illustrated in below Figure.



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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