

X65401-PRO

NetAPP® X65401 Compatible TAA Compliant 40GBase-SR4 QSFP+ Transceiver (MMF, 850nm, 150m, DOM, 0 to 70C, MPO)

Features

- SFF-8436 Compliance
- MPO Connector
- Commercial Temperature 0 to 70 Celsius
- Multi-mode Fiber
- Hot Pluggable
- Excellent ESD Protection
- Metal with Lower EMI
- RoHS Compliant and Lead Free



Applications:

- 40GBase Ethernet
- 4x10G Breakout Option
- Access and Enterprise

Product Description

This NetAPP® X65401 compatible QSFP+ transceiver provides 40GBase-SR4 throughput up to 150m over multi-mode fiber (MMF) using a wavelength of 850nm via an MPO connector. It is guaranteed to be 100% compatible with the equivalent NetAPP® 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. | Typ. | Max. | Unit |
|----------------------------|------------------|------|---------|------|------|
| Supply Voltage | V _{CC} | -0.5 | | 4.0 | V |
| Storage Temperature | T _{stg} | -40 | | 85 | °C |
| Operating Case Temperature | T _c | 0 | 25 | 70 | °C |
| Relative Humidity | RH | 5 | | 95 | % |
| Data Rate Per Channel | | | 10.3125 | | Gbps |

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} | | | 430 | mA | |
| Power Dissipation | P _{DISS} | | | 1.5 | W | |
| Transmitter | | | | | | |
| Input Differential Impedance | Z _{IN} | | 100 | | Ω | |
| Differential Data Input Swing | V _{IN,pp} | 180 | | 900 | mVp-p | |
| Receiver | | | | | | |
| Output Differential Impedance | Z _{OUT} | | 100 | | Ω | |
| Differential Data Output Swing | V _{OUT,pp} | 300 | | 850 | mVp-p | 1 |
| Data Output Rise Time/Fall Time | T _r /T _f | 28 | | | ps | 2 |

Notes:

1. Internally AC coupled but requires an external 100Ω differential load termination.
2. 20 – 80 %.

Optical Characteristics

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Notes |
|------------------------------------|-----------------------------|------|------|------|------|-------|
| Transmitter | | | | | | |
| Launch Optical Power | Po | -7.6 | | +2.4 | dBm | 1 |
| Center Wavelength Range | λC | 830 | 850 | 860 | nm | |
| Extinction Ratio | ER | 3 | | | dB | 2 |
| Spectral Width (RMS) | Δλ | | | 0.65 | nm | |
| Transmitter and Dispersion Penalty | TDP | | | 3.2 | dB | |
| Optical Return Loss Tolerance | ORLT | | | 12 | dB | |
| Eye Diagram | IEEE Std 802.3ba Compatible | | | | | |
| Receiver | | | | | | |
| Center Wavelength | λC | 830 | 850 | 860 | nm | |
| Receiver Sensitivity (Pavg) | S | | | -9.5 | dBm | 3 |
| Damage Threshold | POL | 2.5 | | | dBm | 3 |
| Optical Return Loss | ORL | 12 | | | dB | |
| LOS Assert | LOSA | -30 | | | dBm | |
| LOS De-Assert | LOSD | | | -11 | dBm | |
| LOS Hysteresis | | 0.5 | | | dB | |

Notes:

1. The optical power is launched into OM3 MMF.
2. Measured with a PRBS $2^{31}-1$ test pattern @10.3125Gbps.
3. Measured with PRBS $2^{31}-1$ test pattern, 10.3125Gbps, and BER<10⁻¹².

Pin Descriptions

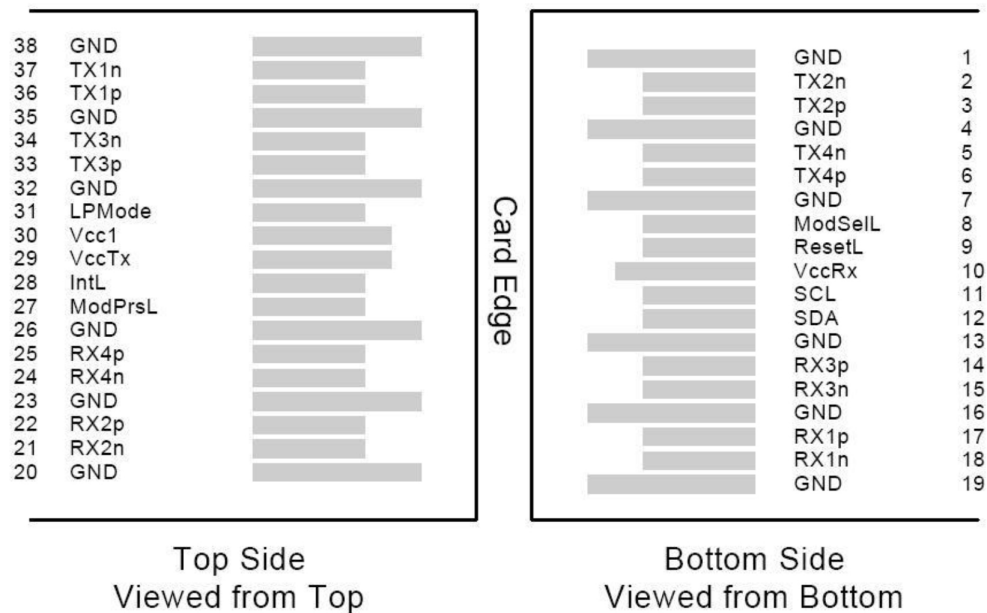
| Pin | Logic | Symbol | Name/Descriptions | Notes |
|-----|-------------|---------|--|-------|
| 1 | | GND | Module Ground. | 1 |
| 2 | CML-I | Tx2- | Transmitter Inverted Data Input. | |
| 3 | CML-I | Tx2+ | Transmitter Non-Inverted Data Input. | |
| 4 | | GND | Module Ground. | 1 |
| 5 | CML-I | Tx4- | Transmitter Inverted Data Input. | |
| 6 | CML-I | Tx4+ | Transmitter Non-Inverted Data Input. | |
| 7 | | GND | Module Ground. | 1 |
| 8 | LVTTL-I | ModSelL | 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. | 1 |
| 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 |

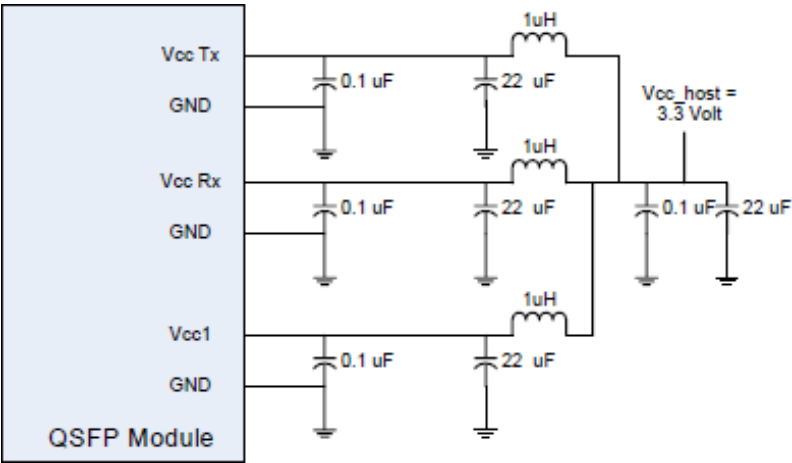
Notes:

1. 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 -10k Ω pull-up resistor to the Host_Vcc.

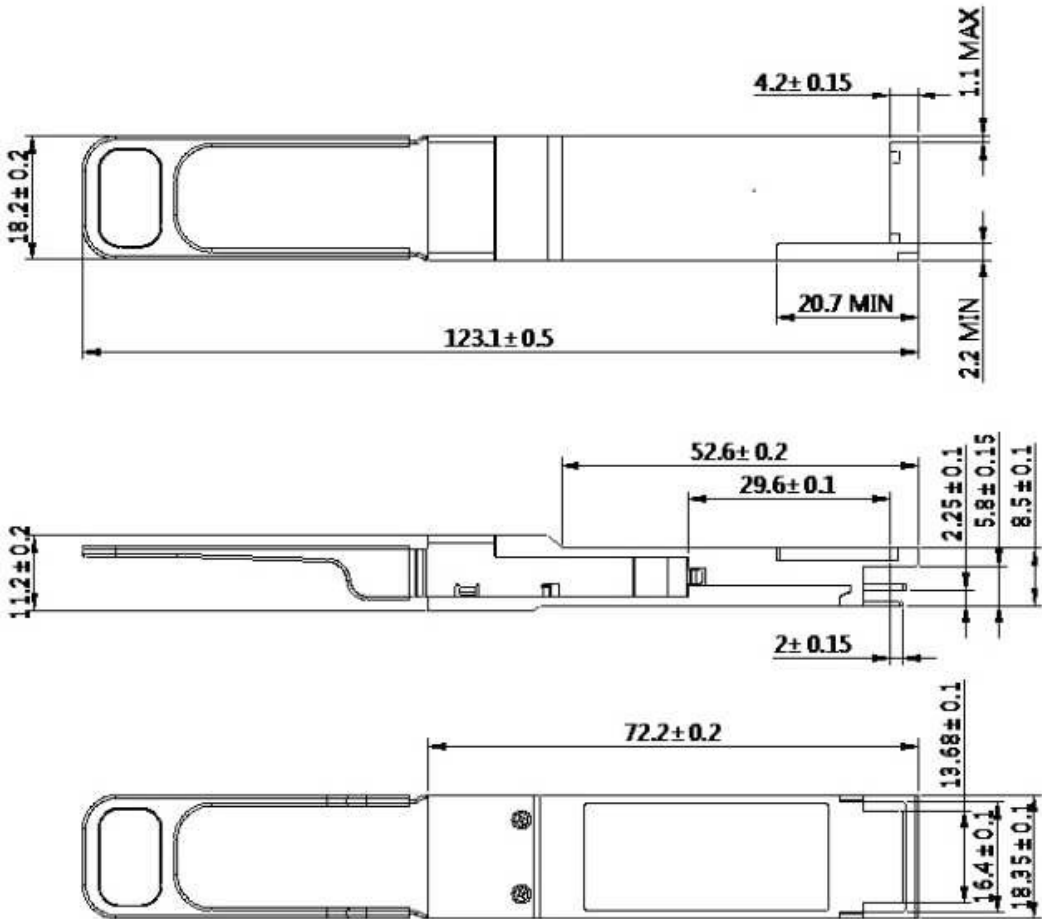
Electrical Pin-Out Details



Recommended Host Board Power Supply Filter Network



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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