

SFPP-10G-DW50-ER-PRO

Juniper Networks® SFPP-10G-DW50-ER Compatible TAA Compliant 10GBase-DWDM 100GHz SFP+ Transceiver (SMF, 1537.40nm, 40km, DOM, 0 to 70C, LC)

Features

- SFF-8432 and SFF-8472 Compliance
- Temperature-stabilized EML transmitter and PIN receiver
- Duplex LC Connector
- Commercial Temperature 0 to 70 Celsius
- Single-mode Fiber
- Hot Pluggable
- Excellent ESD Protection
- Metal with Lower EMI
- RoHS Compliant and Lead Free



Applications:

- 10x Gigabit Ethernet over DWDM
- 8x/10x Fibre Channel
- Access, Metro and Enterprise

Product Description

This Juniper Networks® SFPP-10G-DW50-ER compatible SFP+ transceiver provides 10GBase-DWDM throughput up to 40km over single-mode fiber (SMF) using a wavelength of 1537.40nm via an LC connector. It is guaranteed to be 100% compatible with the equivalent Juniper Networks® 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.



Wavelength Guide (100GHz ITU-T Channel)

| Channel # | Frequency (THz) | Center Wavelength (nm) |
|-----------|-----------------|------------------------|
| 17 | 191.7 | 1563.86 |
| 18 | 191.8 | 1563.05 |
| 19 | 191.9 | 1562.23 |
| 20 | 192.0 | 1561.42 |
| 21 | 192.1 | 1560.61 |
| 22 | 192.2 | 1559.79 |
| 23 | 192.3 | 1558.98 |
| 24 | 192.4 | 1558.17 |
| 25 | 192.5 | 1557.36 |
| 26 | 192.6 | 1556.55 |
| 27 | 192.7 | 1555.75 |
| 28 | 192.8 | 1554.94 |
| 29 | 192.9 | 1554.13 |
| 30 | 193.0 | 1553.33 |
| 31 | 193.1 | 1552.52 |
| 32 | 193.2 | 1551.72 |
| 33 | 193.3 | 1550.92 |
| 34 | 193.4 | 1550.12 |
| 35 | 193.5 | 1549.32 |
| 36 | 193.6 | 1548.51 |
| 37 | 193.7 | 1547.72 |
| 38 | 193.8 | 1546.92 |
| 39 | 193.9 | 1546.12 |
| 40 | 194.0 | 1545.32 |
| 41 | 194.1 | 1544.53 |
| 42 | 194.2 | 1543.73 |
| 43 | 194.3 | 1542.94 |
| 44 | 194.4 | 1542.14 |
| 45 | 194.5 | 1541.35 |
| 46 | 194.6 | 1540.56 |
| 47 | 194.7 | 1539.77 |
| 48 | 194.8 | 1538.98 |
| 49 | 194.9 | 1538.19 |

| | | |
|----|-------|---------|
| 50 | 195.0 | 1537.40 |
| 51 | 195.1 | 1536.61 |
| 52 | 195.2 | 1535.82 |
| 53 | 195.3 | 1535.04 |
| 54 | 195.4 | 1534.25 |
| 55 | 195.5 | 1533.47 |
| 56 | 195.6 | 1532.68 |
| 57 | 195.7 | 1531.90 |
| 58 | 195.8 | 1531.12 |
| 59 | 195.9 | 1530.33 |
| 60 | 196.0 | 1529.55 |
| 61 | 196.1 | 1528.77 |

Absolute Maximum Ratings

| Parameter | Symbol | Min. | Typ | Max. | Unit |
|----------------------------|--------|------|---------|------|------|
| Storage Temperature | Tstg | -40 | | 85 | °C |
| Supply Voltage | Vcc | -0.5 | | 4.0 | V |
| Operating Case Temperature | Tc | 0 | 25 | 70 | °C |
| Relative Humidity | RH | 5 | | 95 | % |
| Data Rate | | | 10.3125 | | Gbps |

Electrical Characteristics

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Notes | |
|----------------------------------|---------------------------------|-----------------|------|-------|-------------------|-------|---|
| Supply Voltage | Vcc | 3.135 | 3.3 | 3.465 | V | | |
| Module Supply Current | Icc | | | 450 | mA | | |
| Power Dissipation | P _D | | | 1500 | mW | | |
| Transmitter | | | | | | | |
| Input Differential Impedance | Z _{in} | | 100 | | Ω | | |
| Differential Data Input Swing | V _{in,p-p} | 180 | | 700 | mV _{p-p} | | |
| TX_FAULT | Transmitter Fault | V _{OH} | 2.0 | | VccHost | V | |
| | Normal Operation | V _{OL} | 0 | | 0.8 | V | |
| TX_DISABLE | Transmitter Disable | V _{IH} | 2.0 | | VccHost | V | |
| | Transmitter Enable | V _{IL} | 0 | | 0.8 | V | |
| Receiver | | | | | | | |
| Output Differential Impedance | Z _o | | 100 | | Ω | | |
| 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) | V _{OH} | 2.0 | | VccHost | V | 3 |
| | Normal Operation | V _{OL} | 0 | | 0.8 | V | 3 |

Notes:

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

Optical Characteristics

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Notes |
|------------------------------------|---|---------|------|---------|-------|-------|
| Transmitter | | | | | | |
| Launch Optical Power | PO | -1 | | 4 | dBm | 1 |
| Center Wavelength Range | λ_c | 1528.77 | | 1563.86 | nm | |
| Center Wavelength Spacing | | | 100 | | GHZ | |
| Center Wavelength Tolerance | $\Delta\lambda_c$ | -100 | | 100 | pm | |
| Extinction Ratio | EX | 8.2 | | | dB | |
| Side Mode Suppression Ratio | SMSR | 30 | | | dB | |
| Transmitter and Dispersion Penalty | TDP | | | 2.0 | dB | |
| Relative Intensity Noise | RIN | | | -128 | dB/Hz | |
| Optical Return Loss Tolerance | ORLT | | | 21 | dB | |
| Pout @ TX-Disable Asserted | Poff | | | -30 | dBm | |
| Eye Diagram | IEEE Std 802.3-2005 10Gb Ethernet 10GBASE-ER compatible | | | | | |
| Receiver | | | | | | |
| Center Wavelength | λ_c | 1528 | | 1565 | nm | |
| Receiver Sensitivity (P_{avg}) | S | | | -15 | dBm | |
| Receiver Overload (P_{avg}) | POL | -1 | | | dBm | |
| Optical Return Loss | ORL | 26 | | | dB | |
| LOS De-Assert | LOSD | | | -16 | dBm | |
| LOS Assert | LOSA | -35 | | | dBm | |
| LOS Hysteresis | | 0.5 | | | dB | |

Notes:

1. The optical power is launched into 9/125 μ m 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} .
4. Comply with IEEE 802.3-2005.

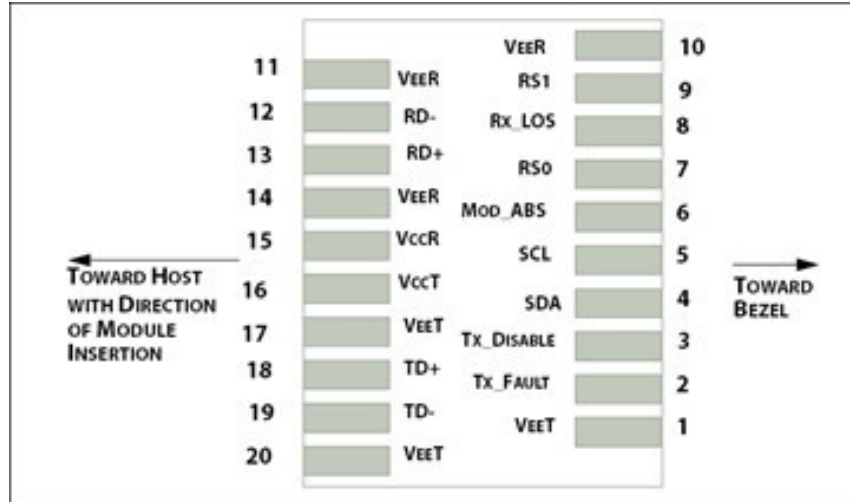
Pin Descriptions

| Pin | Symbol | Name/Descriptions | Ref. |
|-----|------------|---|------|
| 1 | VeeT | Transmitter Ground. | 1 |
| 2 | TX_Fault | Transmitter Fault (LVTTTL-O) - High indicates a fault condition. | 2 |
| 3 | TX_Disable | Transmitter Disable (LVTTTL-I) – High or open disables the transmitter. | 3 |
| 4 | SDA | Two wire serial interface Data Line (LVCMOS-I/O) (MOD-DEF2). | 4 |
| 5 | SCL | Two wire serial interface Clock Line (LVCMOS-I/O) (MOD-DEF1) | 4 |
| 6 | MOD_ABS | Module Absent (Output), connected to VeeT or VeeR in the module. | 5 |
| 7 | RS0 | Rate Select 0 – Not used, Presents high input impedance. | |
| 8 | RX_LOS | Receiver Loss of Signal (LVTTTL-O). | 2 |
| 9 | RS1 | Rate Select 1 – Not used, Presents high input impedance. | |
| 10 | VeeR | Receiver Ground. | 1 |
| 11 | VeeR | Receiver Ground. | 1 |
| 12 | RD- | Inverse Received Data out (CML-O). | |
| 13 | RD+ | Received Data out (CML-O). | |
| 14 | VeeR | Receiver Ground. | |
| 15 | VccR | Receiver Power - +3.3V. | |
| 16 | VccT | Transmitter Power - +3.3 V. | |
| 17 | VeeT | Transmitter Ground. | 1 |
| 18 | TD+ | Transmitter Data In (CML-I). | |
| 19 | TD- | Inverse Transmitter Data In (CML-I). | |
| 20 | VeeT | Transmitter 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.
3. This input is internally biased high with a 4.7K Ω to 10K Ω pull-up resistor to VccT.
4. 2-Wire Serial interface clock and data lines require an external pull-up resistor dependent on the capacitance load.
5. This is the ground return that on the host board requires a 4.7K Ω to 10K Ω pull-up resistor to VccHost.

Host PCB SFP+ Pad Assignment Top View



Recommended Host Board Power Supply Filter Network



Recommended Application Interface Block Diagram

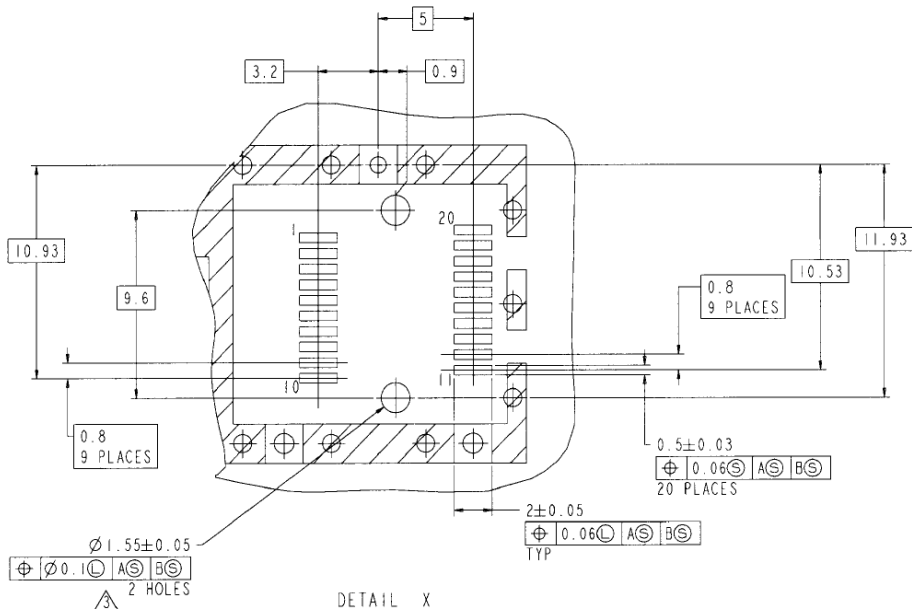
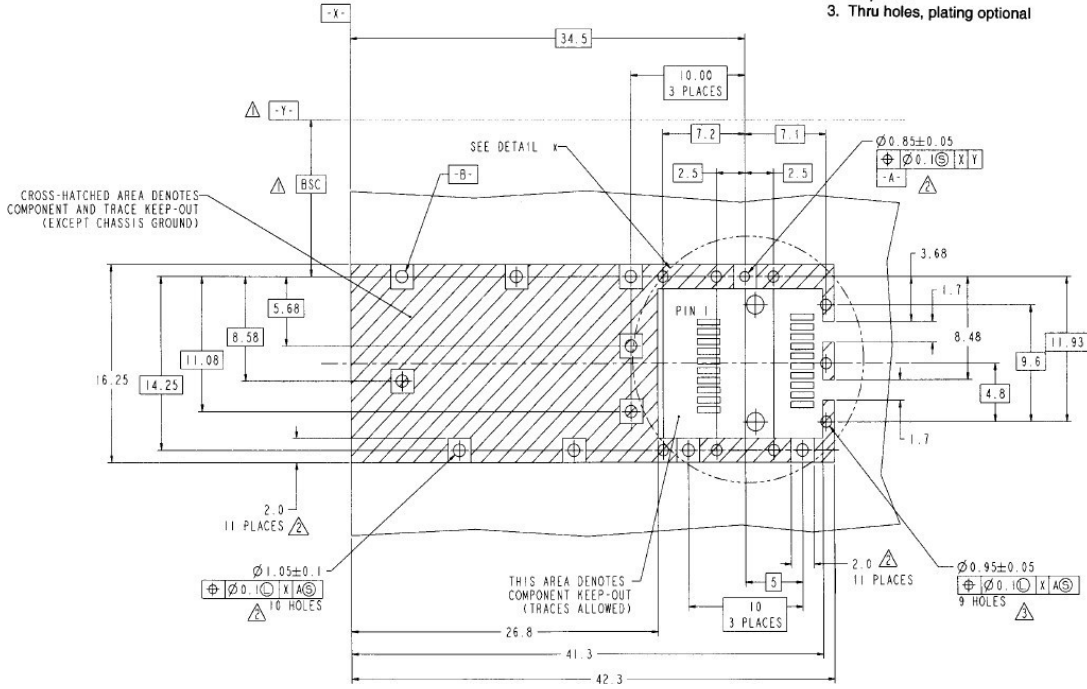


Mechanical Specifications



PCB Layout Recommendation

- Notes:
1. Datum and basic dimensions established by customer
 2. Pads and vias are chassis ground, 11 places
 3. Thru holes, plating optional



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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