**1025-4940-PRO**

Optelian® 1025-4940 Compatible TAA Compliant 10GBase-DWDM 100GHz SFP+ Transceiver (SMF, 1561.42nm, 80km, DOM, -40 to 85C, LC)

**Features**

- SFF-8432 and SFF-8472 Compliance
- Duplex LC Connector
- Industrial Temperature -40 to 85 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 Optelian® 1025-4940 compatible SFP+ transceiver provides 10GBase-DWDM throughput up to 80km over single-mode fiber (SMF) using a wavelength of 1561.42nm via an LC connector. It is guaranteed to be 100% compatible with the equivalent Optelian® 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.

TAA
COMPLIANT

## Wavelength Guide (100GHz ITU-T Channel)

| ITU Channel # | Frequency (THZ) | Center Wavelength (nm) |
| --- | --- | --- |
| 61 | 196.1 | 1528.77 |
| 60 | 196.0 | 1529.55 |
| 59 | 195.9 | 1530.33 |
| 58 | 195.8 | 1531.12 |
| 57 | 195.7 | 1531.90 |
| 56 | 195.6 | 1532.68 |
| 55 | 195.5 | 1533.47 |
| 54 | 195.4 | 1534.25 |
| 53 | 195.3 | 1535.04 |
| 52 | 195.2 | 1535.82 |
| 51 | 195.1 | 1536.61 |
| 50 | 195.0 | 1537.40 |
| 49 | 194.9 | 1538.19 |
| 48 | 194.8 | 1538.98 |
| 47 | 194.7 | 1539.77 |
| 46 | 194.6 | 1540.56 |
| 45 | 194.5 | 1541.35 |
| 44 | 194.4 | 1542.14 |
| 43 | 194.3 | 1542.94 |
| 42 | 194.2 | 1543.73 |
| 41 | 194.1 | 1544.53 |
| 40 | 194.0 | 1545.32 |
| 39 | 193.9 | 1546.12 |
| 38 | 193.8 | 1546.92 |
| 37 | 193.7 | 1547.72 |
| 36 | 193.6 | 1548.51 |
| 35 | 193.5 | 1549.32 |
| 34 | 193.4 | 1550.12 |
| 33 | 193.3 | 1550.92 |
| 32 | 193.2 | 1551.72 |
| 31 | 193.1 | 1552.52 |
| 30 | 193.0 | 1553.33 |
| 29 | 192.9 | 1554.13 |
| 28 | 192.8 | 1554.94 |
| 27 | 192.7 | 1555.75 |
| 26 | 192.6 | 1556.55 |
| 25 | 192.5 | 1557.36 |
| 24 | 192.4 | 1558.17 |
| 23 | 192.3 | 1558.98 |
| 22 | 192.2 | 1559.79 |
| 21 | 192.1 | 1560.61 |
| 20 | 192.0 | 1561.42 |

| 19 | 191.9 | 1562.23 |
|---|---|---|
| 18 | 191.8 | 1563.05 |
| 17 | 191.7 | 1563.86 |

## Absolute Maximum Ratings

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Notes |
|---|---|---|---|---|---|---|
| Maximum Supply Voltage | Vcc | 0.5 | | 4.0 | V | |
| Storage Temperature | Tstg | -40 | | +85 | °C | 1 |
| Operating Case Temperature | Tc | -40 | | +85 | °C | |
| Data Rate | BR | 1.2 | 10.3125 | 11.3 | Gbps | 2 |
| Bit Error Rate | BER | | | $10^{-12}$ | | |
| Supply Current | Icc | | 450 | 500 | mA | 3 |

**Notes:**

1. Ambient temperature.
2. IEEE 802.3ae.
3. For electrical power interface.

## Electrical Characteristics Vcc=3.4 to 3.46V, Tc

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Notes |
|---|---|---|---|---|---|---|
| Input Voltage | Vcc | 3.14 | 3.3 | 3.46 | V | |
| Power Consumption | $P_D$ | | | 1.5 | W | |
| Transmitter | | | | | | |
| Differential Input Impedance | ZIN | | 100 | | Ω | |
| Differential Data Input Swing | VIN,pp | 300 | | 850 | mV | |
| Transmit Enable voltage | $V_D$ | 2 | | Vcc | V | |
| Transmit Enable voltage | $V_{EN}$ | VeeT | | VeeT + 0.8 | V | |
| Receiver | | | | | | |
| Differential Data Output Swing | VOUT_pp | 300 | | 850 | mV | |
| Data Output Rise/Fall Time (20%-80%) | Tr/Tf | 28 | | | ps | |
| LOS Asserted | LOSA | 2 | | Host_Vcc | V | |
| LOS De-Asserted | LOSD | VeeR | | VeeR+ 0.5 | V | |

**Notes:**

1. For electrical power interface.

**Optical Characteristics**

| Parameter | Symbol | Min | Typ. | Max | Unit | Notes |
|---|---|---|---|---|---|---|
| **Transmitter** | | | | | | |
| **Optical Power** | PTX | 0 | | 4 | dBm | 1 |
| **Optical Wavelength** | λ | λ-0.1 | λ | λ+0.1 | nm | 2 |
| **Extinction Ratio** | ER | 9 | | | dB | |
| **Spectral Width (-20dB)** | Δλ | | | 0.6 | nm | |
| **Side Mode Suppression Ratio** | SMSR | 30 | | | dB | |
| **Relative Intensity Noise** | RIN | | | -128 | dB/Hz | |
| **Transmitter Dispersion Penalty** | TDP | | | 3.2 | dB | |
| **Launch Power of OFF Transmitter** | Poff | | | -30 | dBm | 1 |
| **Receiver** | | | | | | |
| **Optical Center Wavelength** | λc | 1260 | | 1620 | nm | |
| **Average Receive Power** | $P_{RX}$ | -24 | | -7 | dBm | |
| **Receiver Sensitivity @ 10.3 GBps** | PX_SEN | | | -24 | dBm | 3 |
| **Receiver Reflectance** | $TR_{RX}$ | | | -27 | dB | |
| **LOS Assert** | LOSA | -35 | | | dB | |
| **LOS De-assert** | LOSD | | | -27 | dB | |
| **LOS Hysteresis** | LOSH | 0.5 | | | dB | |

**Notes:**

1. Average.
2. λ = specified ITU Grid wavelength.
3. Measured with PRBS $2^{31}-1$ test mode, BER<$10^{-12}$.

**Pin Descriptions**

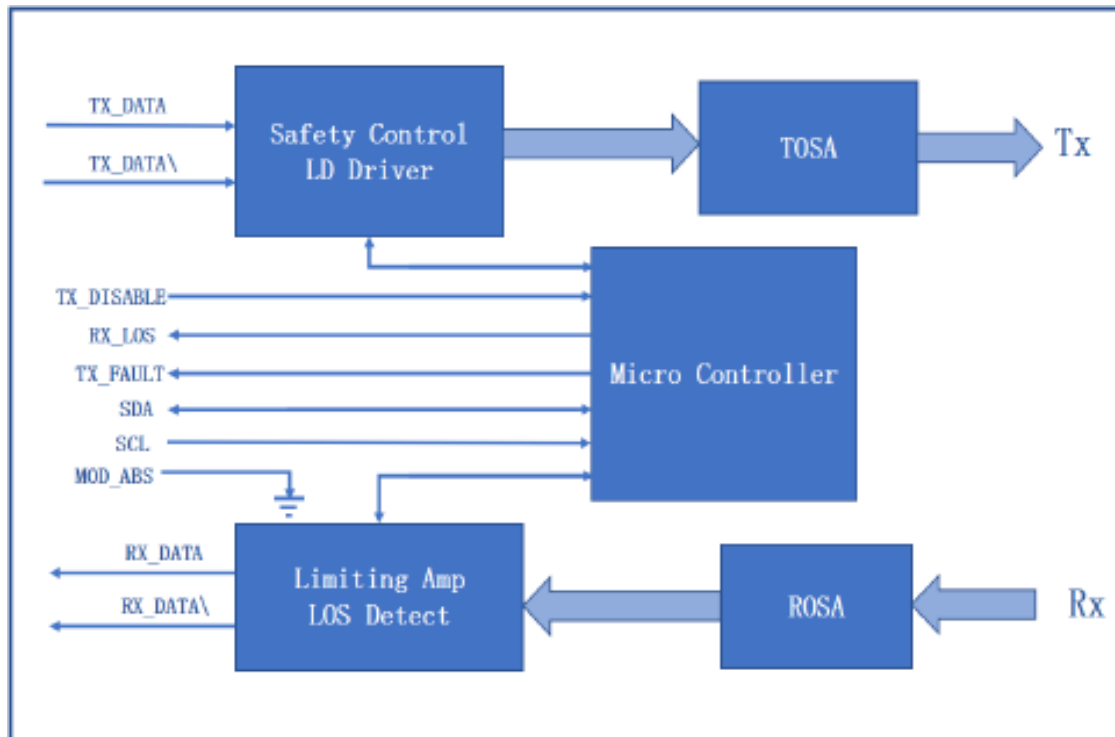| Pin | Symbol | Name/Descriptions | Ref. |
|---|---|---|---|
| 1 | VeeT | Transmitter Ground (Common with Receiver Ground). | 1 |
| 2 | TX_Fault | Transmitter Fault. | |
| 3 | TX_Disable | Transmitter Disable. Laser output disabled on "high" or "open." | 2 |
| 4 | SDA | 2-Wire Serial Interface Data. | 3 |
| 5 | SCL | 2-Wire Serial Interface Clock. | 3 |
| 6 | MOD_ABS | Module Absent. Grounded within the module. | 3 |
| 7 | RS0 | Rate Select 0. Not used. | |
| 8 | LOS | Loss of Signal indication. "Logic 0" indicates normal operation. | 4 |
| 9 | RS1 | Rate Select 1. Not used. | 1 |
| 10 | VeeR | Receiver Ground (Common with Transmitter Ground). | 1 |
| 11 | VeeR | Receiver Ground (Common with Transmitter Ground). | 1 |
| 12 | RD- | Receiver Inverted Data out. AC Coupled. | |
| 13 | RD+ | Receiver Non-inverted DATA out. AC Coupled. | |
| 14 | VeeR | Receiver Ground (Common with Transmitter Ground). | 1 |
| 15 | VccR | Receiver Power Supply. | |
| 16 | VccT | Transmitter Power Supply. | |
| 17 | VeeT | Transmitter Ground (Common with Receiver Ground). | 1 |
| 18 | TD+ | Transmitter Non-Inverted Data In. AC Coupled. | |
| 19 | TD- | Transmitter Inverted Data In. AC Coupled. | |
| 20 | VeeT | Transmitter Ground (Common with Receiver Ground). | 1 |

**Notes:**

1. Circuit ground is isolated form chassis ground.
2. Disable TDIS>2Vor open. Enable TDIS<0.8V.
3. Should be pulled up with 4.7kΩ-10KΩ on host board to a voltage between 2V and 3.46V.
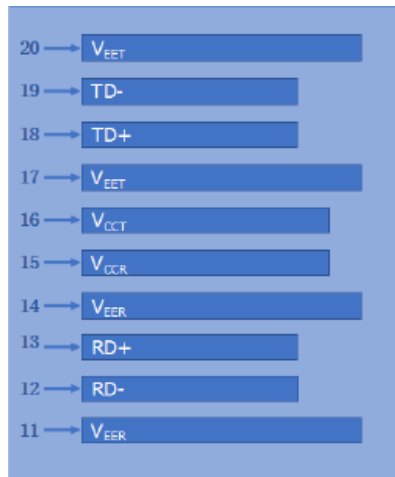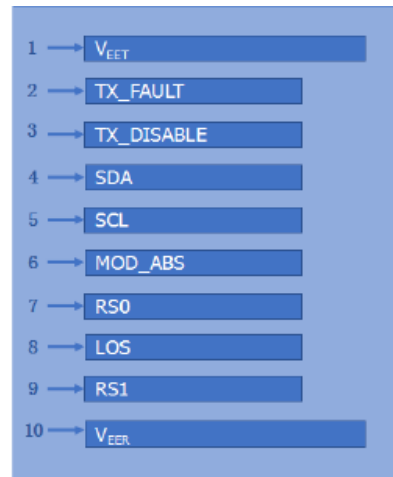4. LOS is open collector output.

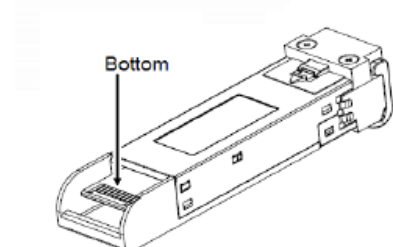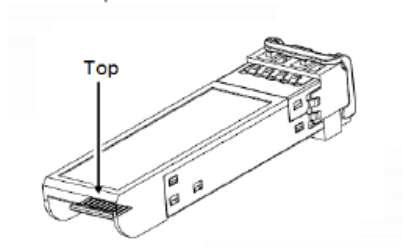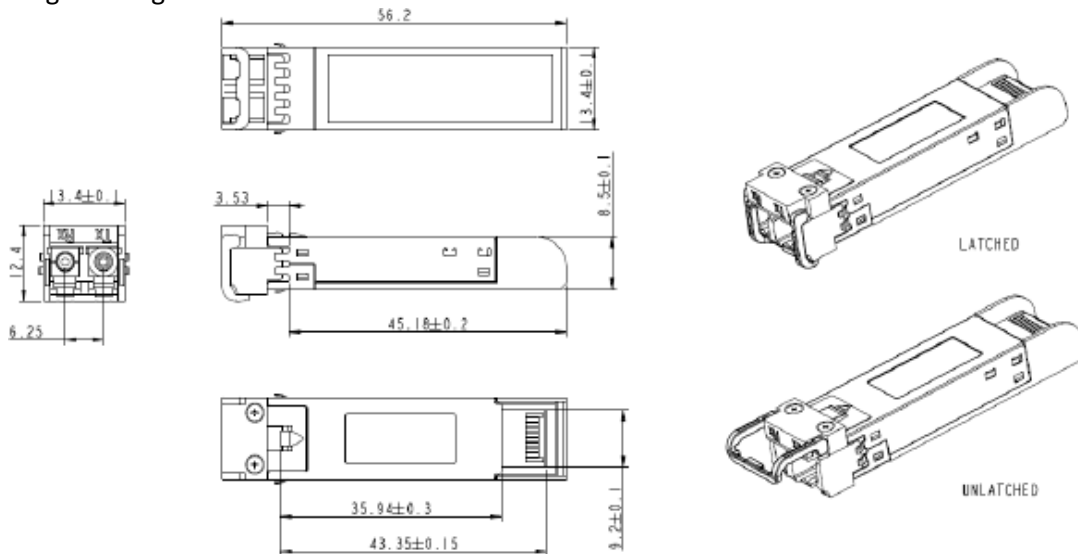## Typical eye Diagram
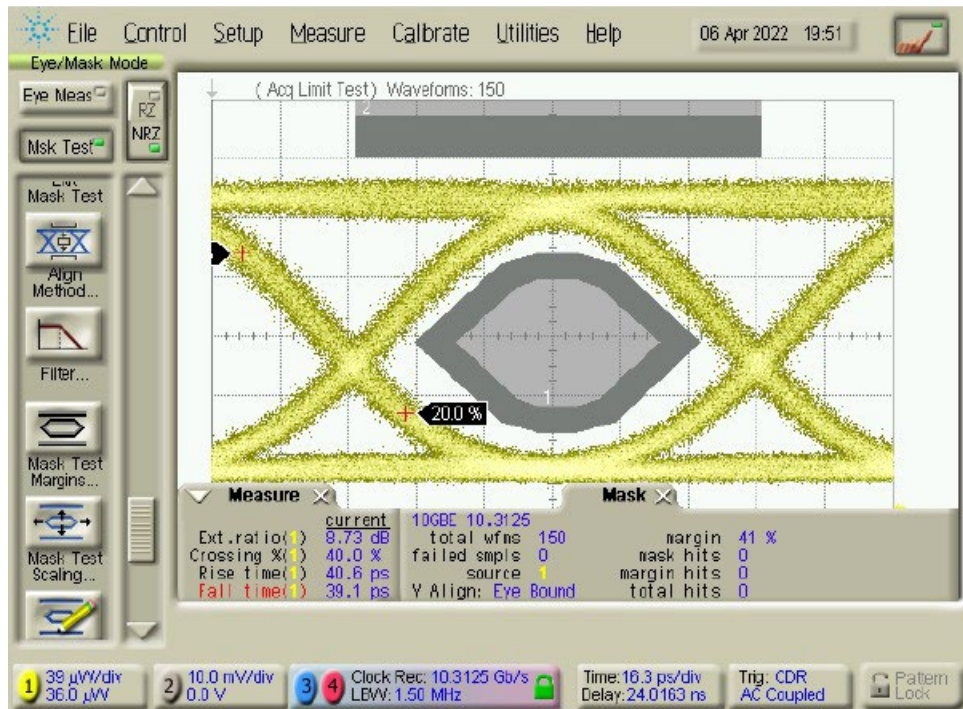


## Block Diagram

**Electrical Pad Layout**

| Top of Board | | Bottom of Board | |
|---|---|---|---|
| 20 → $V_{EET}$ | | 1 → $V_{EET}$ | |
| 19 → TD- | | 2 → TX_FAULT | |
| 18 → TD+ | | 3 → TX_DISABLE | |
| 17 → $V_{EET}$ | | 4 → SDA | |
| 16 → $V_{CCT}$ | | 5 → SCL | |
| 15 → $V_{CCR}$ | | 6 → MOD_ABS | |
| 14 → $V_{EER}$ | | 7 → RS0 | |
| 13 → RD+ | | 8 → LOS | |
| 12 → RD- | | 9 → RS1 | |
| 11 → $V_{EER}$ | | 10 → $V_{EER}$ | |

Top of Board    Bottom of Board

Top    Bottom

**Mechanical Specifications**

Module Weight: 16.5g

Dust Cap Weight: 0.95g

56.2

13.4±0.1

8.5±0.1

13.4±0.1

12.4

6.25

3.53

45.18±0.2

LATCHED

35.94±0.3

43.35±0.15

9.2±0.1

UNLATCHED

All Dimensions are ±0.2mm unless otherwise specified

**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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