

## SFPP-10GE-ZR-1510-100-AO

Juniper Networks® SFPP-10GE-ZR Compatible TAA 10GBase-CWDM SFP+ Transceiver (SMF, 1510nm, 100km, 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

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

### Product Description

This Juniper Networks® SFPP-10GE-ZR-1510-100 compatible SFP+ transceiver provides 10GBase-CWDM throughput up to 100km over single-mode fiber (SMF) using a wavelength of 1510nm 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.

AddOn'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.")



### CWDM Available Wavelengths

| Wavelengths | Min. | Typ. | Max. |
|-------------|------|------|------|
| 47          | 1465 | 1471 | 1477 |
| 49          | 1485 | 1491 | 1497 |
| 51          | 1505 | 1511 | 1517 |
| 53          | 1525 | 1531 | 1537 |
| 55          | 1545 | 1551 | 1557 |

### Absolute Maximum Ratings

| Parameter                  | Symbol | Min. | Typ.    | Max.              | Unit |
|----------------------------|--------|------|---------|-------------------|------|
| Maximum Supply Voltage     | Vcc    | -0.5 |         | 4.0               | V    |
| Storage Temperature        | Tstg   | -40  |         | 85                | °C   |
| Operating Case Temperature | Tc     | 0    | 25      | 70                | °C   |
| Bit Error Rate             | BER    |      |         | 10 <sup>-12</sup> |      |
| Data Rate                  | DR     | 1.2  | 10.3125 | 11.3              | Gbps |

### Electrical Characteristics

| Parameter                           | Symbol  | Min. | Typ. | Max.     | Unit | Notes |
|-------------------------------------|---------|------|------|----------|------|-------|
| Power Supply Voltage                | Vcc     | 3.14 | 3.30 | 3.46     | V    |       |
| Power Supply Current                | Icc     |      |      | 550      | mA   | 1     |
| Power Consumption                   | PC      |      |      | 1.5      | W    |       |
| Transmitter                         |         |      |      |          |      |       |
| Input Differential Impedance        | RIN     |      | 100  |          | Ω    |       |
| Differential Data Input Swing       | VIN,pp  | 120  |      | 1200     | mV   |       |
| Transmit Disable Voltage            | VD      | 2    |      | Vcc      | V    |       |
| Transmit Enable Voltage             | VEN     | Vee  |      | Vee+0.8  | V    |       |
| Receiver                            |         |      |      |          |      |       |
| Differential Data Output Swing      | VOUT,pp | 640  |      | 1000     | mV   |       |
| Data Output Rise/Fall Time (20-80%) | Tr/Tf   | 28   |      |          | ps   |       |
| LOS Fault                           | VLOSA   | 2    |      | Host_Vcc | V    |       |
| LOS Normal                          | VLOSD   | Vee  |      | Vee+0.5  | V    |       |

### Notes:

1. For the electrical power interface.

## Optical Characteristics

| Parameter                       | Symbol             | Min. | Typ. | Max. | Unit  | Notes |
|---------------------------------|--------------------|------|------|------|-------|-------|
| Transmitter                     |                    |      |      |      |       |       |
| Output Optical Power            | P <sub>TX</sub>    | 1.5  |      | 4    | dBm   | 1     |
| Optical Center Wavelength       | $\lambda_C$        | 1505 | 1511 | 1517 | nm    |       |
| Extinction Ratio                | ER                 | 9    |      |      | dB    |       |
| Spectral Width (-20dB)          | $\Delta\lambda$    |      |      | 0.6  | nm    |       |
| Side-Mode Suppression Ratio     | SMSR               | 30   |      |      | dB    |       |
| Relative Intensity Noise        | RIN                |      |      | -128 | dB/Hz |       |
| Transmitter Dispersion Penalty  | TDP                |      |      | 4    | dB    |       |
| Transmitter Jitter              |                    |      |      |      |       | 2     |
| Launch Power of Off Transmitter | P <sub>off</sub>   |      |      | -30  | dBm   | 1     |
| Receiver                        |                    |      |      |      |       |       |
| Optical Center Wavelength       | $\lambda_C$        | 1260 |      | 1620 | nm    |       |
| Average Receive Power           | P <sub>RX</sub>    | -25  |      | -7   | dBm   |       |
| Receiver Sensitivity @10.3Gbps  | R <sub>X_SEN</sub> |      |      | -25  | dBm   | 1     |
| Receiver Reflectance            | T <sub>R_RX</sub>  |      |      | -27  | dB    |       |
| LOS Assert                      | LOSA               | -35  |      |      | dBm   |       |
| LOS De-Assert                   | LOSD               |      |      | -27  | dBm   |       |
| LOS Hysteresis                  | LOSH               | 0.5  |      |      | dB    |       |

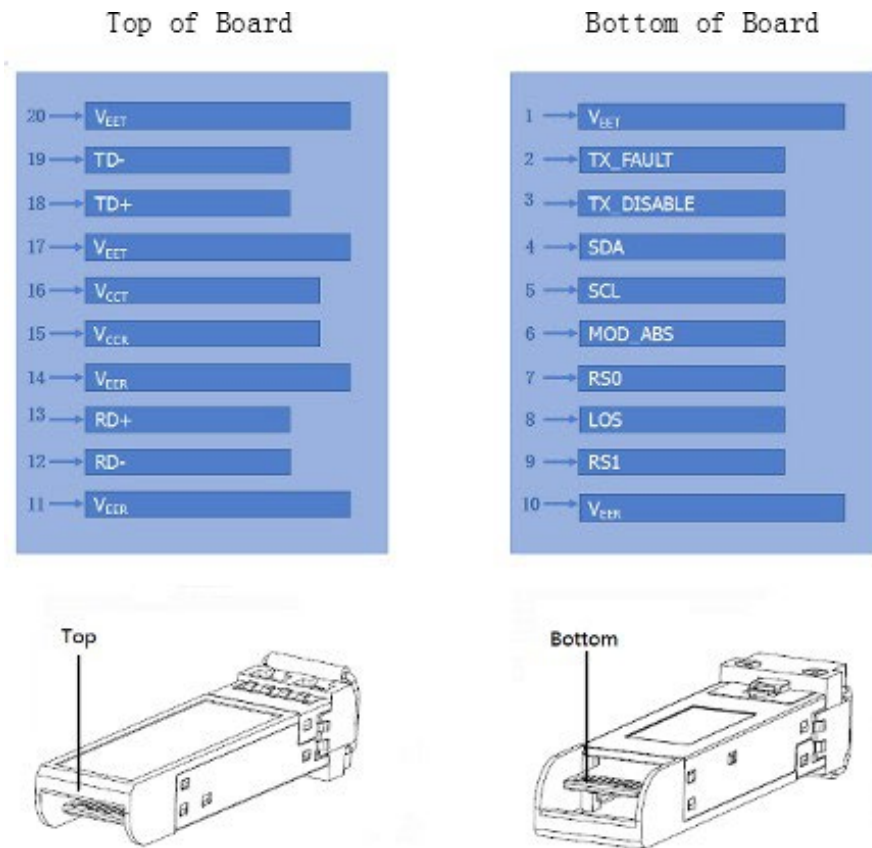
## Pin Descriptions

| Pin | Symbol     | Name/Description                                                 | Notes |
|-----|------------|------------------------------------------------------------------|-------|
| 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        | No Connection Required.                                          |       |
| 8   | LOS        | Loss of Signal Indication. “Logic 0” indicates normal operation. | 4     |
| 9   | RS1        | No Connection Required.                                          | 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     |

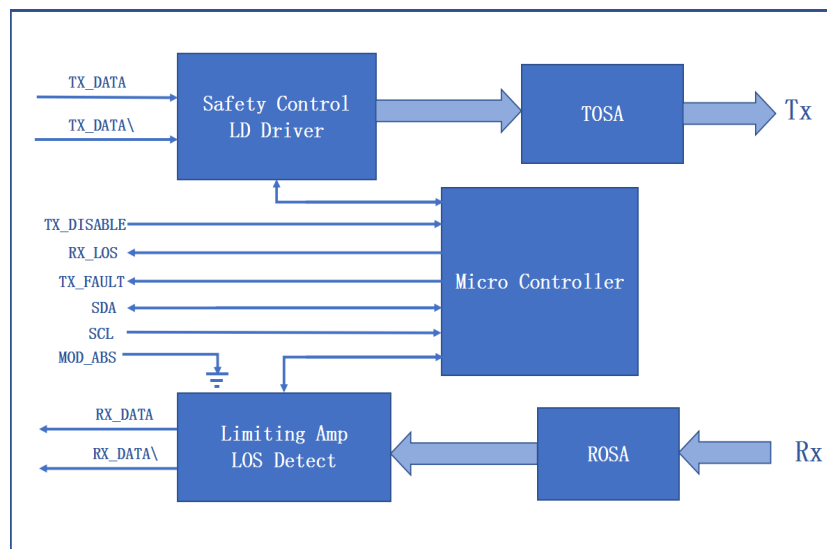
### Notes:

1. The circuit ground is isolated from the chassis ground.
2. Disabled: TDIS>2V or open, enabled: TDIS<0.8V.
3. Should be pulled up with 4.7k $\Omega$  to 10k $\Omega$  on the host board to a voltage between 2V and 3.6V.
4. LOS is an open collector output.

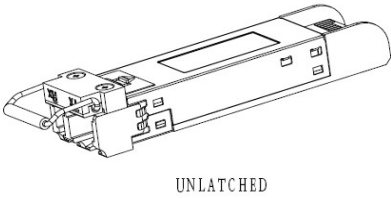
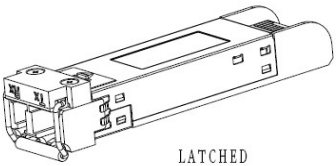
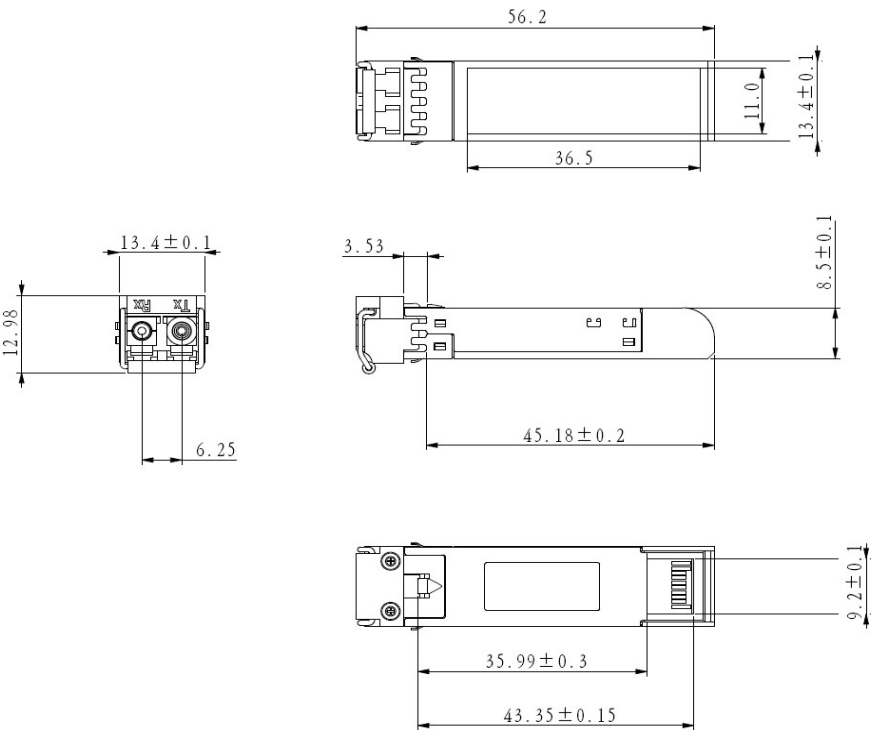
## Electrical Pad Layout



## Block Diagram of Transceiver



Mechanical Specifications



## About AddOn Networks

In 1999, AddOn Networks entered the market with a single product. Our founders fulfilled a severe shortage for compatible, cost-effective optical transceivers that compete at the same performance levels as leading OEM manufacturers. Adhering to the idea of redefining service and product quality not previously had in the fiber optic networking industry, AddOn invested resources in solution design, production, fulfillment, and global support.

Combining one of the most extensive and stringent testing processes in the industry, an exceptional free tech support center, and a consistent roll-out of innovative technologies, AddOn has continually set industry standards of quality and reliability throughout its history.

Reliability is the cornerstone of any optical fiber network and is ingrained in AddOn's DNA. It has played a key role in nurturing the long-term relationships developed over the years with customers. AddOn remains committed to exceeding industry standards with certifications from ranging from NEBS Level 3 to ISO 9001:2005 with every new development while maintaining the signature reliability of its products.



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