**JNP-SFP-25G-LR-AO**

Juniper Networks® JNP-SFP-25G-LR Compatible TAA 25GBase-LR SFP28 Transceiver (SMF, 1310nm, 10km, LC, DOM)

**Features**

- SFF-8402 and SFF-8472 Compliance
- 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**

- 25GBase Ethernet
- Access and Enterprise

**Product Description**

This Juniper Networks® JNP-SFP-25G-LR compatible SFP28 transceiver provides 25GBase-LR throughput up to 10km over single-mode fiber (SMF) using a wavelength of 1310nm 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."

**Rev. 030122**

**Regulatory Compliance**

- ESD to the Electrical PINs: compatible with MIL-STD-883E Method 3015.4
- ESD to the LC Receptacle: compatible with IEC 61000-4-3
- EMI/EMC compatible with FCC Part 15 Subpart B Rules, EN55022:2010
- Laser Eye Safety compatible with FDA 21CFR, EN60950-1& EN (IEC) 60825-1,2
- RoHS compliant with EU RoHS 2.0 directive 2015/863/EU

**Absolute Maximum Ratings**

| Parameter | Symbol | Min. | Typ. | Max | Unit | Notes |
|---|---|---|---|---|---|---|
| **Storage Temperature** | Ts | -40 | | 85 | ˚C | |
| **Relative Humidity** | RH | 5 | | 95 | % | |
| **Supply Voltage** | Vcc | -0.5 | | 4.0 | V | |
| **Operating Case Temperature** | Tc | 0 | 25 | 70 | ˚C | |
| **Data Rate** | BR | | 25.78 | | Gb/s | |
| **Bit Error Rate** | BER | | | $5x10^{-5}$ | | 1 |
| **Supported Link Length on 9/125um SMF, 25.78GB/s** | L | | 10 | | km | 2 |

**Notes:**

1. Tested with a PRBS $2_{31}$-1 test pattern for 25.78Gb/s operation.
2. Distances are based on FC-PI-6 Rev 3.1 and IEEE 802.3 standards.

**Electrical Characteristics**

| Parameter | | Symbol | Min | Typ | Max | Unit | Notes |
|---|---|---|---|---|---|---|---|
| **Supply Voltage** | | Vcc | 3.135 | 3.3 | 3.465 | V | |
| **Data Rate** | | | | 25.78 | | GB/s | |
| **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 | | $V_{CCHOST}$ | V | |
| | **Normal Operation** | $V_{OL}$ | 0 | | 0.8 | V | |
| **TX_DISABLE** | **Transmitter Disable** | $V_{IH}$ | 2.0 | | $V_{CCHOST}$ | 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 Rinse Time, Fall Time** | | tr, tf | 15 | | | Ps | 2 |
| **Rx_LOS** | **Loss of Signal (LOS)** | $V_{OH}$ | 2.0 | | $V_{CCHOST}$ | V | 3 |
| | **Normal Operation** | $V_{OL}$ | 0 | | 0.8 | V | 3 |

**Notes:**

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

**Optical Characteristics**

| Parameter | Symbol | Min | Typ | Max | Unit | Notes |
|---|---|---|---|---|---|---|
| **Transmitter** | | | | | | |
| **Launch Optical Power** | Po | -5 | | 2 | dBm | 1 |
| **Extinction Ratio** | ER | 4 | | | dB | |
| **Center Wavelength Range** | λc | 1295 | 1310 | 1325 | nm | |
| **Optical Modulation Amplitude** | OMA | 631 | | | uW | |
| **Transmitter Dispersion Penalty** | TDP | | | 2.7 | dB | |
| **Spectral Width** | Δλ | | | 1 | nm | 2 |
| **Optical Rise/Fall Time @25.78 Gb/s** | tr/tf | | | 15 | ps | 3 |
| **Optical Return Loss Tolerance** | ORLT | | | 12 | dB | |
| **Pout @TX-Disable Asserted** | $P_{OFF}$ | | | -30 | dBm | 1 |
| **Receiver** | | | | | | |
| **Center Wavelength** | λc | 1260 | 1310 | 1370 | nm | |
| **Receiver OMA Sensitivity** | RxSENS | | | -11.4 | dBm | 4 |
| **Receiver Overload (P avg)** | $P_{OL}$ | 2 | | | dBm | |
| **Optical Return Loss** | ORL | 26 | | | dB | |
| **LOS De-Assert** | $LOS_D$ | | | -13 | dBm | |
| **LOS Assert** | $LOS_A$ | -30 | | | dBm | |
| **LOS Hysteresis** | | 0.5 | | | dB | |

**Notes:**

1. Class 1 Laser Safety per FDA/CDRH and EN (IEC) 60825 regulations.
2. 20dB spectral width.
3. Unfiltered, 20-80%.
4. Measured with PRBS 231-1 at 5×10-5 BER.

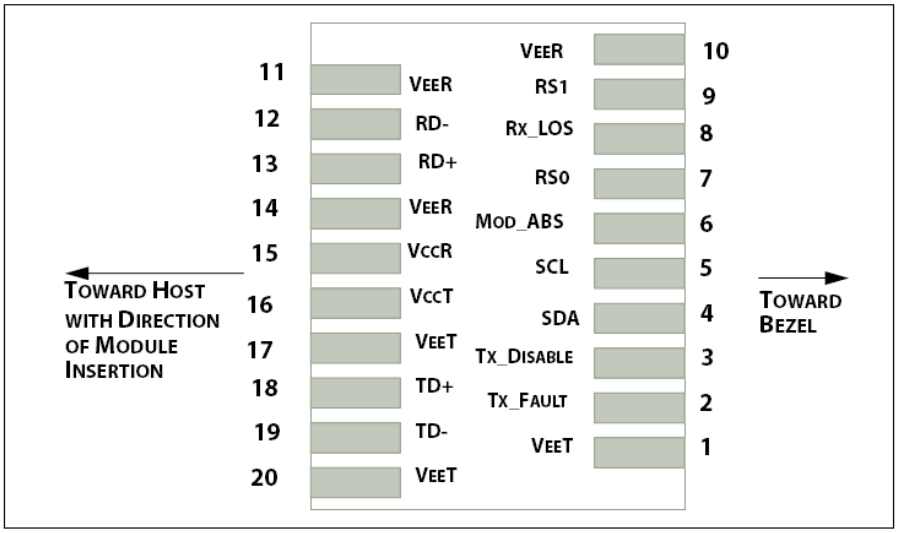
**Pin Description**

| Pin | Name | Description | Notes |
|---|---|---|---|
| **1** | VeeT | Transmitter Ground | 1 |
| **2** | TX_Fault | Transmitter Fault (LVTTL-O) - High indicates a fault condition | 2 |
| **3** | TX_Disable | Transmitter Disable (LVTTL-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** | RSO | | 6 |
| **8** | RX_LOS | Receiver Loss of Signal (LVTTL-O) | 2 |
| **9** | RS1 | | 6 |
| **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 |

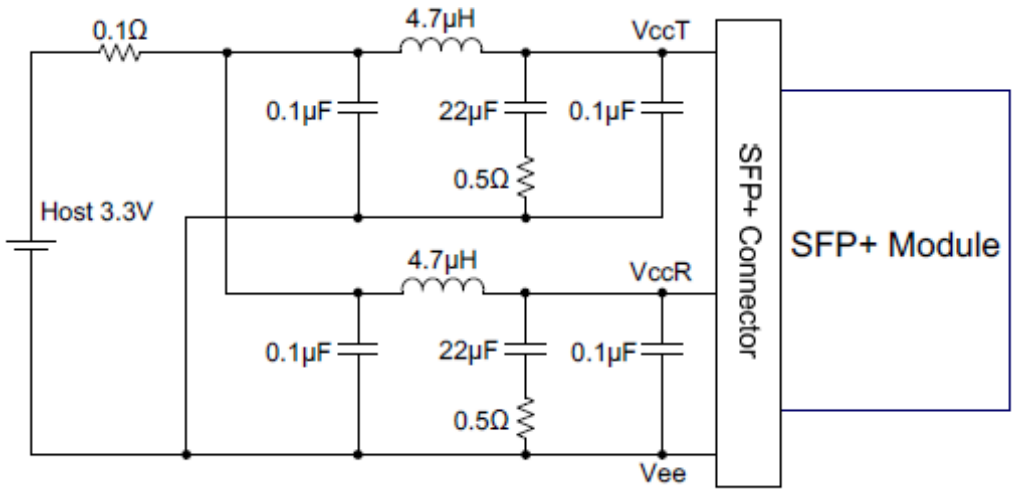
**Notes:**

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 4.7KΩ to 10KΩ pull-up resistor to VccHost.
3. This input is internally biased high with a 4.7KΩ to 10KΩ pull-up resistor to VccT.
4. Two-Wire Serial interface clock and data lines require an external pull-up resistor dependent on the capacitance load.
5. This is a ground return that on the host board requires a 4.7KΩ to 10KΩ pull-up resistor to VccHost.
6. Rate select can also be set through the 2-wire bus in accordance with SFF-8472 v. 12.1, Rx Rate Select is set at Bit 3, Byte 110,
   Address A2h. Tx Rate Select is set at Bit 3, Byte 118, Address A2h.
   Note: writing a “1” selects maximum bandwidth operation. Rate select is the logic OR of the input state of Rate Select Pin and 2-wire bus.

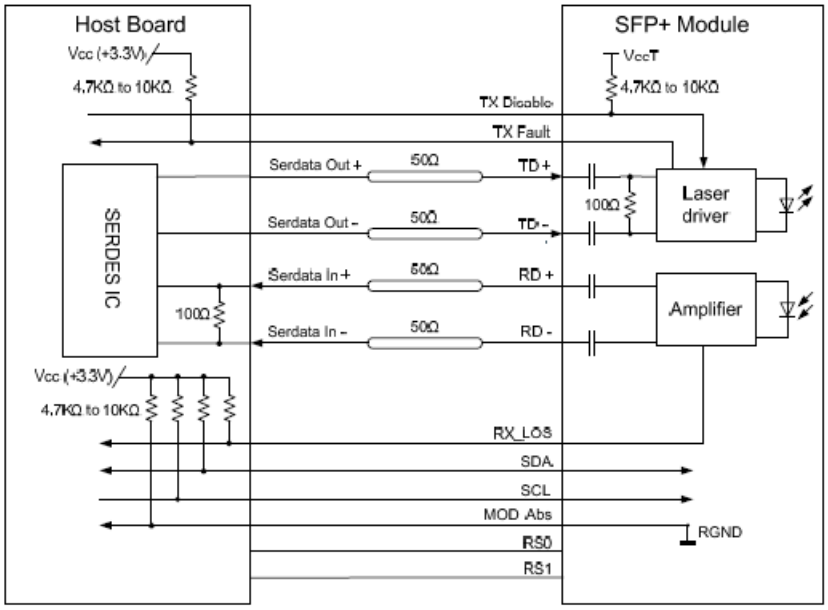
**Host PCB SFP28 pad assignment top view**



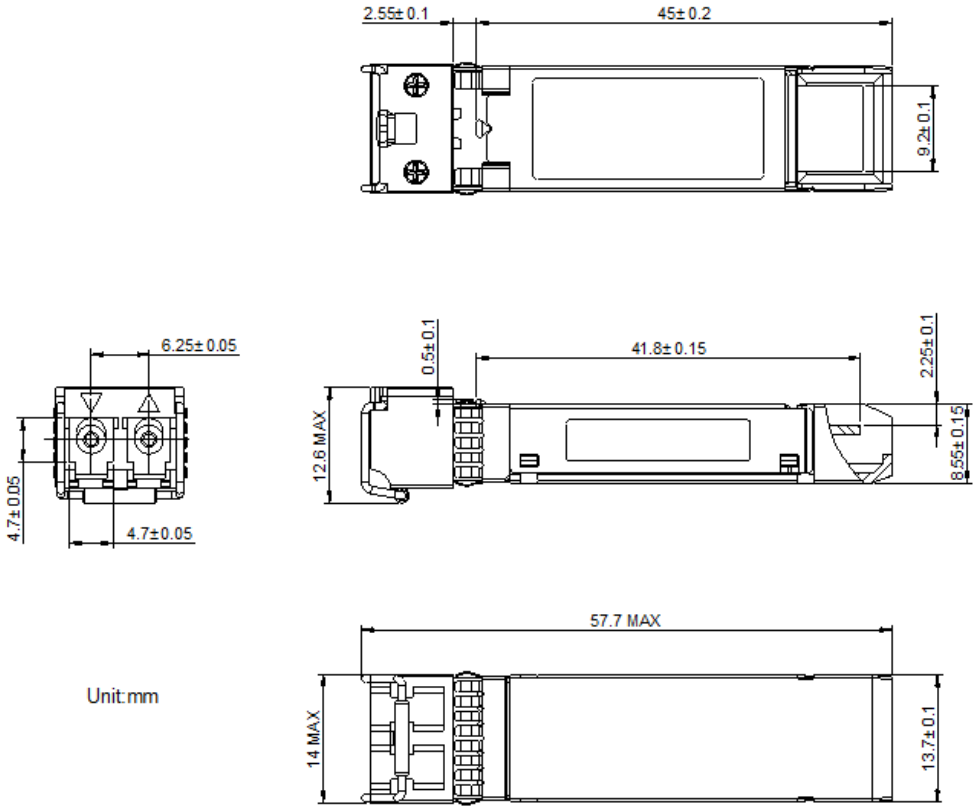

**Recommended Host Board Power Supply Filter Network**



## Recommended Application Interface Block Diagram




## 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 in engrained 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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