

SFP-1GB-DW5360-120-J-C

Juniper Networks® Compatible TAA 1000Base-DWDM SFP+ Transceiver 50GHz (SMF, 1535.04nm to 1529.55nm, 120km, LC, DOM)

Features:

- EML Tunable Transmitter
- Hot Pluggable
- DWDM with 100GHz ITU Grid
- Up to 1.25Gbps Bi-directional Data Links
- SFP MSA Compliant
- Duplex LC Connector
- Up to 120km on 9/125um SMF
- Class 1 Laser Safety Certified
- Operating Temperature: 0 to 70 Celsius
- RoHS Compliant and Lead-Free



Applications:

- Gigabit Ethernet over DWDM
- Access, Metro and Enterprise

Product Description

This Juniper Networks® compatible SFP transceiver provides 1000Base-DWDM throughput up to 120km over single-mode fiber (SMF) using a wavelength of 1535.04nm to 1529.55nm via an LC connector. It can operate at temperatures between 0 and 70C. Our transceiver is built to meet or exceed OEM specifications and is guaranteed to be 100% compatible with Juniper Networks®. It has been programmed, uniquely serialized, and tested for data-traffic and application to ensure that it will initialize and perform identically. All of our transceivers comply with Multi-Source Agreement (MSA) standards to provide seamless network integration. Additional product features include Digital Optical Monitoring (DOM) support which allows 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.

ProLabs' 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."



Channel Wavelengths

| Channel | Frequency (THz) | Wavelength (nm) |
|-----------|-----------------|-----------------|
| CH20-CH28 | 192.00-192.80 | 1561.42-1554.94 |
| CH29-CH36 | 192.90-193.60 | 1554.13-1548.51 |
| CH37-CH44 | 193.70-194.40 | 1547.72-1542.14 |
| CH45-CH52 | 194.50-195.20 | 1541.35-1535.82 |
| CH53-CH60 | 195.30-196.00 | 1535.04-1529.55 |

Absolute Maximum Ratings

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Notes |
|-----------------------|--------|------|------|------|------|-------|
| Data Rate | DR | | | 1.25 | Gbps | |
| Operating Temperature | Tc | 0 | | 70 | °C | |
| Storage Temperature | Tstg | -40 | | 85 | °C | |
| Maximum Voltage | Vcc | -0.5 | | 4 | V | |

Electrical Characteristics

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Notes |
|--------------------------------|---------|-------|------|---------|-------|-------|
| Supply Current | Icc | | | 606 | mA | |
| Input Voltage | Vcc | 3.135 | 3.3 | 3.465 | V | |
| Power Dissipation | PD | | | 2.0 | W | |
| Transmitter | | | | | | |
| Input Differential Impedance | ZIN | | 100 | | Ω | |
| Differential Data Input Swing | VIN,pp | 180 | | 900 | mVp-p | |
| Transmit Disable Voltage | VD | 2.0 | | Vcc+0.3 | V | |
| Transmit Enable Voltage | VE | 0 | | 0.8 | V | |
| Receiver | | | | | | |
| Differential Output Impedance | ZOUT | | 100 | | Ω | |
| Differential Data Output Swing | VOUT,pp | 450 | 600 | 900 | mV | |
| LOS Assert Voltage | VLOSA | 2.0 | | Vcc | V | |
| LOS De-Assert Voltage | VLOSD | 0 | | 0.8 | V | |

Notes:

1. For the electrical power interface.

Optical Characteristics

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Notes |
|-----------------------------|-------------------|---------|------|---------|---------|-------|
| Transmitter | | | | | | |
| Launch Optical Power | Po | -1.0 | | 4.0 | dBm | 1 |
| Center Wavelength | λ_C | 1554.94 | | 1561.42 | nm | |
| Center Wavelength Spacing | | | 100 | | GHz | |
| Center Wavelength Deviation | $\Delta\lambda_C$ | -12.5 | | 12.5 | GHz | |
| Wavelength Tuning Time | | | | 2 | seconds | |
| Extinction Ratio | ER | 9 | | | dB | 2 |
| Side-Mode Suppression Ratio | SMSR | 30 | | | dB | |
| POUT @Tx_Disable Asserted | Poff | | | -30 | dBm | 1 |
| Receiver | | | | | | |
| Optical Center Wavelength | λ_C | 1260 | | 1620 | nm | |
| Receiver Sensitivity @120km | S | | | -30 | dBm | 3 |
| Receiver Overload | POL | -7 | | | dBm | |
| Optical Return Loss | ORL | | | -27 | dB | |
| LOS Assert | LOSA | -45 | | | dBm | |
| LOS De-Assert | LOSD | | | -31 | dBm | |
| LOS Hysteresis | LOSH | 0.5 | | | dB | |

Notes:

1. The optical power is launched into 9/125 μ m SMF.
2. Measured with a PRBS7 test pattern @1.25Gbps.
3. Measured with a PRBS7 test pattern @1.25Gbps. BER=1E⁻¹².

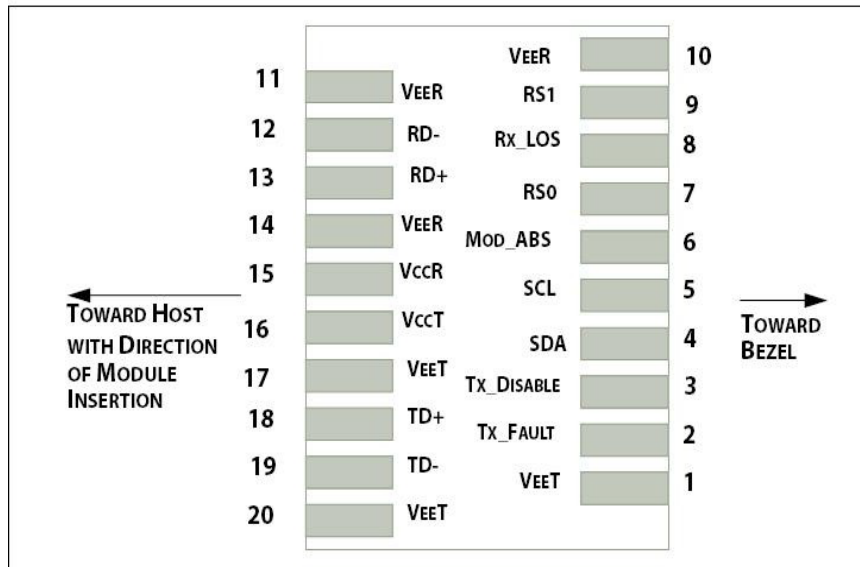
Pin Descriptions

| Pin | Symbol | Name/Description | Notes |
|-----|------------|--|-------|
| 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 | 2-Wire Serial Interface Data (LVCMOS-I/O) (MOD-DEF2). | 4 |
| 5 | SCL | 2-Wire Serial Interface Clock (LVCMOS-I/O) (MOD-DEF1). | 4 |
| 6 | MOD_ABS | Module Absent Output. Connected to the VeeT or VeeR in the module. | 5 |
| 7 | RS0 | No Connection Required. | |
| 8 | Rx_LOS | Receiver Loss of Signal (LVTTTL-O). | 2 |
| 9 | RS1 | No Connection Required. | |
| 10 | VeeR | Receiver Ground. | 1 |
| 11 | VeeR | Receiver Ground. | 1 |
| 12 | RD- | Receiver Inverted Data Out. CML-O. | |
| 13 | RD+ | Receiver Data Out. CML-O. | |
| 14 | VeeR | Receiver Ground. | |
| 15 | VccR | +3.3V Receiver Power Supply. | |
| 16 | VccT | +3.3V Transmitter Power Supply. | |
| 17 | VeeT | Transmitter Ground. | 1 |
| 18 | TD+ | Transmitter Data In. CML-I. | |
| 19 | TD- | Transmitter Inverted Data In. CML-I. | |
| 20 | VeeT | Transmitter Ground. | 1 |

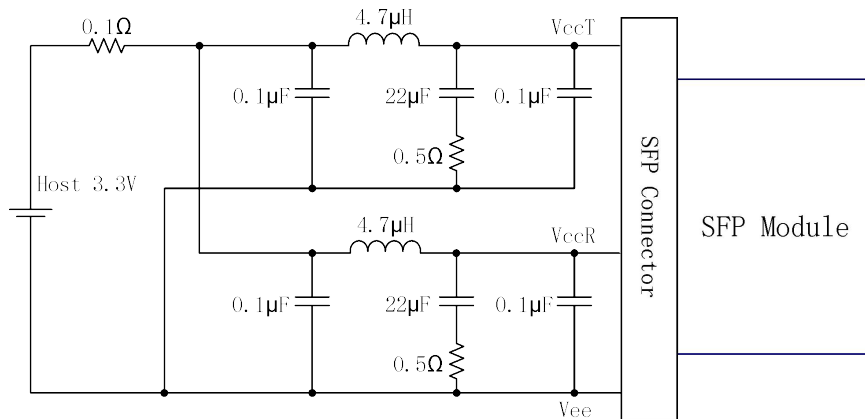
Notes:

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 the Host_Vcc.
3. This input is internally biased "high" with a 4.7kΩ to 10kΩ pull-up resistor to the VccT.
4. 2-wire serial interface clock and data line requires an external pull-up resistor.
5. This is a ground return that, on the host board, requires a 4.7kΩ to 10kΩ pull-up resistor to the Host_Vcc.

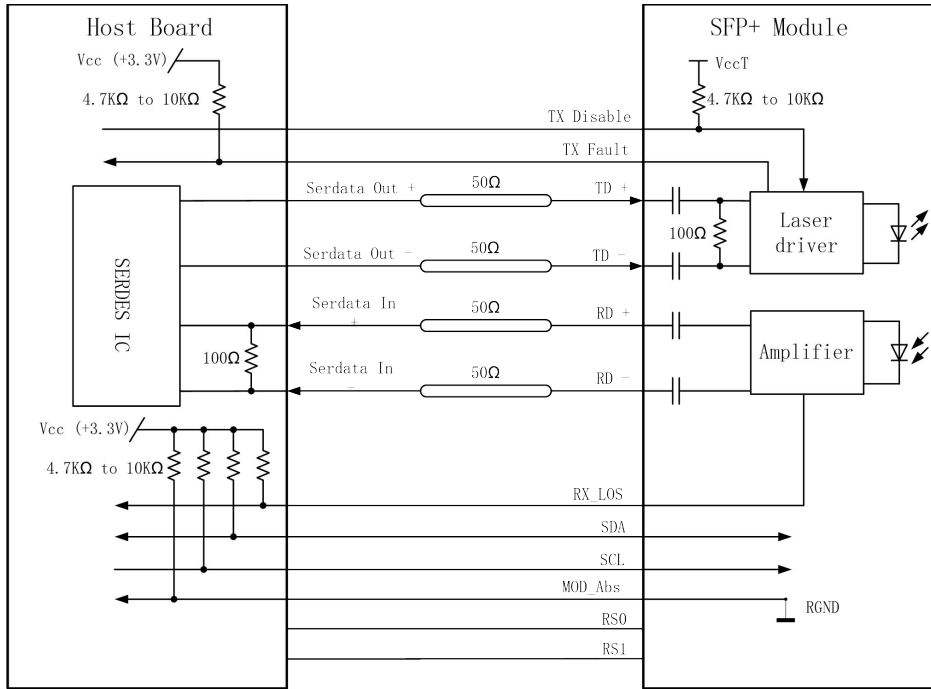
Electrical Pad Layout



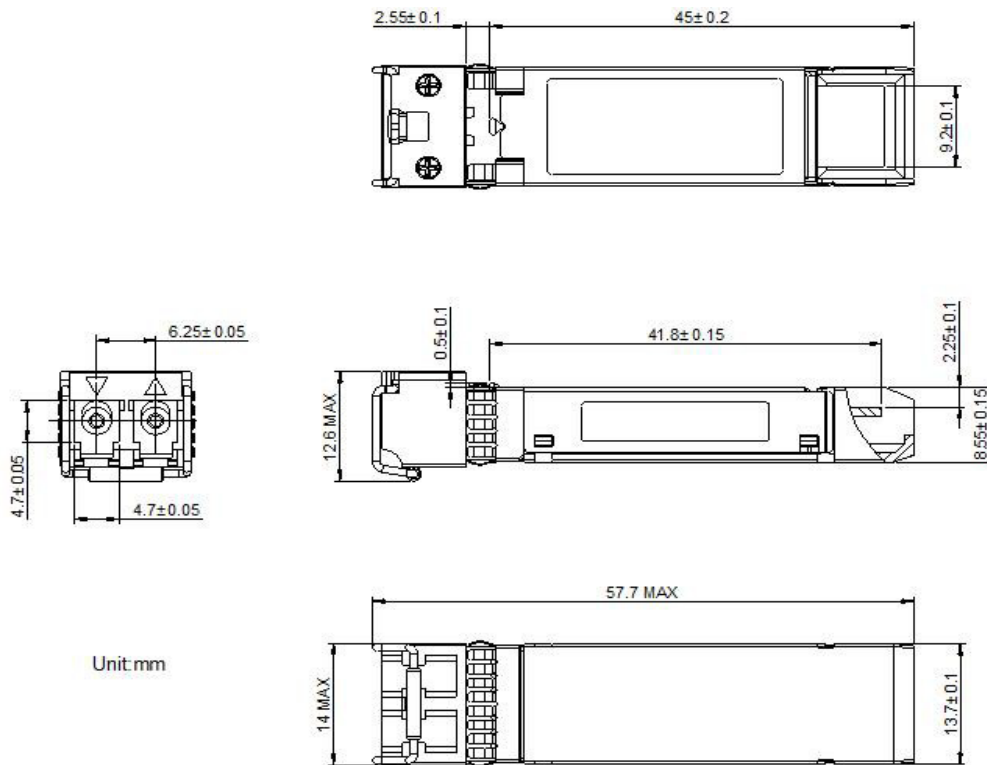
Recommended Host Board Supply Filter Network



Block Diagram of Transceiver



Mechanical Specifications



About ProLabs

Our extensive experience comes as standard. For over 20 years ProLabs has delivered optical connectivity solutions that give our customers freedom and choice through our ability to provide seamless interoperability. At the heart of our company is the ability to provide state-of-the-art optical transport and connectivity solutions that are compatible with more than 100 optical switching and transport platforms.

A Complete Portfolio of Network Solutions

ProLabs is focused on innovations in optical transport and connectivity. The combination of our knowledge of optics and networking equipment enables ProLabs to be your single source for optical transport and connectivity solutions from 100Mb to 1.6T while providing innovative solutions that increase network efficiency. We provide the optical connectivity expertise that is compatible with and enhances your switching and transport equipment.

The Trusted Partner

Customer service is our number one value. ProLabs has invested in people, labs and manufacturing capacity to ensure compatible products, and immediate answers to your questions. With Engineering and Manufacturing offices in the U.K. and U.S. augmented by field offices throughout the U.S., U.K. and Asia, ProLabs is able to be our customers best advocate 24 hours a day.



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