

**SFP-1GB-DW4150-80-I-J-OPC**

Juniper Networks® Compatible TAA 1000Base-DWDM SFP Transceiver 100GHz (SMF, 1544.53nm to 1537.40nm, 80km, LC, DOM, -40 to 85C)

**Features**

- Supports 1.25Gbps Bit Rates
- Up to 80km Link Length @1.25Gbps
- 100GHz ITU-Based Channel Spacing (C-Band)
- Monolithic EML Tunable TOSA
- APD Receiver with Limiting Amplifier
- Duplex LC Connector
- Low Power Consumption: 2.7w
- Positive Power Supply Lines: 3.3V
- Operating Temperature: -40 to 85 Celsius
- RoHS Compliant and Lead-Free

**Applications:**

- 10x Gigabit Ethernet over DWDM
- Gigabit Ethernet over CWDM
- Access, Metro and Enterprise

**Product Description**

This Juniper Networks® compatible SFP transceiver provides 1000Base-DWDM throughput up to 80km over single-mode fiber (SMF) using a wavelength of 1544.53nm to 1537.40nm via an LC connector. It is capable of withstanding rugged environments and can operate at temperatures between -40 and 85C. 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.

OptioConnect's transceivers are RoHS compliant and lead-free.

## ITU Channel Wavelength Guide

| ITU Channel | Frequency (THz) | Center Wavelength (nm) | ITU Channel | Frequency (THz) | Center Wavelength (nm) |
|-------------|-----------------|------------------------|-------------|-----------------|------------------------|
| 11          | 191.1           | 1568.11                | 36          | 193.6           | 1548.51                |
| 12          | 191.2           | 1567.95                | 37          | 193.7           | 1547.72                |
| 13          | 191.3           | 1567.13                | 38          | 193.8           | 1546.92                |
| 14          | 191.4           | 1566.31                | 39          | 193.9           | 1546.12                |
| 15          | 191.5           | 1565.50                | 40          | 194.0           | 1545.32                |
| 16          | 191.6           | 1564.68                | 41          | 194.1           | 1544.53                |
| 17          | 191.7           | 1563.86                | 42          | 194.2           | 1543.73                |
| 18          | 191.8           | 1563.05                | 43          | 194.3           | 1542.94                |
| 19          | 191.9           | 1562.23                | 44          | 194.4           | 1542.14                |
| 20          | 192.0           | 1561.42                | 45          | 194.5           | 1541.35                |
| 21          | 192.1           | 1560.61                | 46          | 194.6           | 1540.56                |
| 22          | 192.2           | 1559.79                | 47          | 194.7           | 1539.77                |
| 23          | 192.3           | 1558.98                | 48          | 194.8           | 1538.98                |
| 24          | 192.4           | 1558.17                | 49          | 194.9           | 1538.19                |
| 25          | 192.5           | 1557.36                | 50          | 195.0           | 1537.4                 |
| 26          | 192.6           | 1556.55                | 51          | 195.1           | 1536.61                |
| 27          | 192.7           | 1555.75                | 52          | 195.2           | 1535.82                |
| 28          | 192.8           | 1554.94                | 53          | 195.3           | 1535.04                |
| 29          | 192.9           | 1554.13                | 54          | 195.4           | 1534.25                |
| 30          | 193.0           | 1553.33                | 55          | 195.5           | 1533.47                |
| 31          | 193.1           | 1552.52                | 56          | 195.6           | 1532.68                |
| 32          | 193.2           | 1551.72                | 57          | 195.7           | 1531.9                 |
| 33          | 193.3           | 1550.92                | 58          | 195.8           | 1531.12                |
| 34          | 193.4           | 1550.12                | 59          | 195.9           | 1530.33                |
| 35          | 193.5           | 1549.32                | 60          | 196.0           | 1529.55                |

## Absolute Maximum Ratings

| Parameter                   | Symbol | Min. | Typ. | Max. | Unit | Notes |
|-----------------------------|--------|------|------|------|------|-------|
| Maximum Supply Voltage      | Vcc    | 0    |      | 3.6  | V    |       |
| Storage Temperature         | Tstg   | -40  |      | 85   | °C   |       |
| Operating Case Temperature  | Tc     | -40  |      | 85   | °C   |       |
| Operating Relative Humidity | RH     | 5    |      | 85   | %    |       |
| Storage Relative Humidity   | RH     | 5    |      | 95   | %    |       |
| Power Consumption           |        |      |      | 2.7  | W    |       |

Electrical Characteristics

| Parameter                      | Symbol | Min.  | Typ. | Max.  | Unit | Notes |
|--------------------------------|--------|-------|------|-------|------|-------|
| Power Supply Voltage           | Vcc    | 3.135 | 3.3  | 3.465 | V    |       |
| Transmitter                    |        |       |      |       |      |       |
| Differential Data Input Swing  | VIN    | 170   |      | 700   | mV   |       |
| Input Differential Impedance   | ZIN    |       | 100  |       | Ω    |       |
| Transmitter Disable Voltage    | VDIS   | 2.0   |      | Vcc   | V    |       |
| Transmitter Enable Voltage     | VEN    | 0     |      | 0.8   | V    |       |
| Receiver                       |        |       |      |       |      |       |
| Differential Data Output Swing | VOUT   | 300   |      | 850   | mV   |       |
| Output Differential Impedance  | ZOUT   |       | 100  |       | Ω    |       |
| LOS Assert Voltage             | VLOSA  | 2.0   |      | Vcc   | V    |       |
| LOS De-Assert Voltage          | VLOSD  | 0     |      | 0.8   | V    |       |

Timing Characteristics

| Parameter                  | Symbol | Min. | Typ. | Max. | Unit | Notes |
|----------------------------|--------|------|------|------|------|-------|
| Module Initialize Time     | Tinit  |      |      | 20   | s    |       |
| Module Channel Switch Time | Tsel   |      |      | 200  | ms   |       |

## Optical Characteristics

| Parameter                        | Symbol      | Min.                               | Typ. | Max.  | Unit  | Notes |
|----------------------------------|-------------|------------------------------------|------|-------|-------|-------|
| Transmitter (10G & 1.25G)        |             |                                    |      |       |       |       |
| Average Output Power             | PAVE        | -2                                 |      | 3     | dBm   | 1     |
| Optical Wavelength               | $\lambda$   | As Per ITU-T 694.1, 100GHz Spacing |      |       | nm    | 2     |
| Center Frequency Spacing         | $\Delta\nu$ | 100                                |      |       | GHz   |       |
| Center Frequency Stability       | -           | -12.5                              |      | +12.5 | GHz   |       |
| Side Mode Suppression Ratio      | SMSR        | 30                                 |      |       | dB    |       |
| Average Output Power (Laser Off) | Poff        |                                    |      | -30   | dBm   |       |
| Extinction Ratio                 | ER          | 8.2                                |      |       | dB    | 3     |
| Dispersion Penalty               | DP          |                                    |      | 2     | dB    |       |
| Relative Intensity Noise         | RIN         |                                    |      | -128  | dB/Hz |       |
| Optical Return Loss Tolerance    | ORLT        | 21                                 |      |       | dB    |       |
| Receiver (10G)                   |             |                                    |      |       |       |       |
| Optical Center Wavelength        |             | 1260                               |      | 1600  | nm    |       |
| Received Sensitivity             | RSENS       |                                    |      | -23   | dBm   | 4     |
| Optical Power Overload           | POL         |                                    |      | -7    | dBm   |       |
| Receiver Reflectance             | RFL         |                                    |      | -27   | dB    |       |
| Rx_LOS of Signal Assert          | LOSA        | -40                                |      |       | dBm   |       |
| Rx_LOS of Signal De-Assert       | LOSD        |                                    |      | -25   | dBm   |       |
| Rx_LOS of Signal Hysteresis      | LOSH        | 0.5                                |      | 6     | dB    |       |
| Receiver (1.25G)                 |             |                                    |      |       |       |       |
| Optical Center Wavelength        |             | 1260                               |      | 1600  | nm    |       |
| Received Sensitivity             | RSENS       |                                    |      | -28   | dBm   | 5     |
| Optical Power Overload           | POL         |                                    |      | -7    | dBm   |       |
| Receiver Reflectance             | RFL         |                                    |      | -27   | dB    |       |
| Rx_LOS of Signal Assert          | LOSA        | -40                                |      |       | dBm   |       |
| Rx_LOS of Signal De-Assert       | LOSD        |                                    |      | -30   | dBm   |       |
| Rx_LOS of Signal Hysteresis      | LOSH        | 0.5                                |      | 6     | dB    |       |

## Notes:

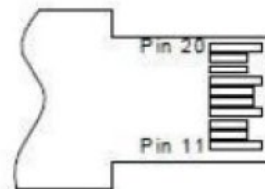
1. The optical power is launched into SMF.
2. See details in ITU Channel Wavelength Guide.
3. Measured with PRBS 2<sup>31</sup>-1 test pattern @10.3125Gbps or 2<sup>7</sup>-1 test pattern @1.25Gbps.
4. Measured with worst ER=8.2dB, BER less than 1E<sup>-12</sup>, and PRBS 2<sup>31</sup>-1 @10.3125Gbps.
5. Measured with worst ER=8.2dB, BER less than 1E<sup>-12</sup>, and PRBS 2<sup>7</sup>-1 @1.25Gbps.

## Pin Descriptions

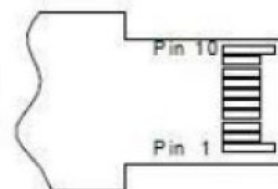
| Pin | Symbol     | Name/Description                                                 | Notes |
|-----|------------|------------------------------------------------------------------|-------|
| 1   | VeeT       | Transmitter Ground. Common with Receiver Ground.                 |       |
| 2   | Tx_Fault   | Transmitter Fault.                                               |       |
| 3   | Tx_Disable | Transmitter Disable. Laser output disabled on “high” or “open.”  |       |
| 4   | SDA        | 2-Wire Serial Interface Data.                                    |       |
| 5   | SCL        | 2-Wire Serial Interface Clock.                                   |       |
| 6   | MOD_ABS    | Module Absent. Grounded within the Module.                       |       |
| 7   | RS0        | Rate Select 0.                                                   |       |
| 8   | LOS        | Loss of Signal Indication. “Logic 0” indicates normal operation. |       |
| 9   | RS1        | No Connection Required.                                          |       |
| 10  | VeeR       | Receiver Ground. Common with Transmitter Ground.                 |       |
| 11  | VeeR       | Receiver Ground. Common with Transmitter Ground.                 |       |
| 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.                 |       |
| 15  | VccR       | Receiver Power Supply.                                           |       |
| 16  | VccT       | Transmitter Power Supply.                                        |       |
| 17  | VeeT       | Transmitter Ground. Common with Receiver Ground.                 |       |
| 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.                 |       |

## Electrical Pin-Out Details

TOP VIEW  
OF BOARD



BOTTOM VIEW  
OF BOARD



Recommended Interface Circuit



Mechanical Specifications



## **OptioConnect**

### **Innovation for the Future of High-Speed Networking**

#### **Who We Are**

OptioConnect is reshaping the landscape of communication and high-speed networking through intelligent technology. With a core focus on cutting edge technology, we deliver smarter fiber optic solutions for enterprise networks, data centers, and next-gen telecom infrastructures.

#### **What We Do**

At OptioConnect, we fuse advanced engineering with intelligent automation to drive the future of networking. Our AI-integrated solutions are designed to optimize performance and streamline operations with:

- Superior Performance
- Network and traffic optimization
- Intelligent energy management
- Seamless OEM compatibility
- Scalable cost-efficiency

#### **Smarter Networks by Design**

Innovation isn't just a goal—it's our process. We embed AI and machine learning across our R&D and product lines, enabling adaptive performance, automated tuning, and faster deployment cycles. The result? Networks that don't just work—they learn, evolve, and outperform.

#### **Our Team**

Our engineers, data scientists, and network architects bring decades of experience and a future-focused mindset. We provide hands-on support with intelligent insights that turn complex challenges into simple solutions.

#### **Our Mission**

To deliver AI-enhanced connectivity that reduces cost, increases speed, and maximizes efficiency—empowering our partners to operate at the forefront of a rapidly evolving digital world.

#### **Let's Connect**

Discover how OptioConnect's intelligent infrastructure solutions can power your network's next leap forward.

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