



### SFP-GPON-B-OPC

Cisco® SFP-GPON-B Compatible TAA 2.5Gbps/1.25Gbps-B+ GPON OLT SFP Transceiver (SMF, 1490nmTx/1310nmRx, 20km, SC, DOM)

#### Features

- 1310nm Burst-Mode APD/TIA Receiver and 1490nm Continuous DFB Laser Transmitter
- Low Power Consumption
- Integrated Single Fiber Bi-Directional Optical Sub-Assembly
- Excellent EMI and EMC
- Digitized Burst-Mode Optical Power Monitoring
- Single SC Receptacle Optical Interface
- Hot-Pluggable
- Operating Temperature: 0 to 70 Celsius
- RoHS Compliant and Lead-Free
- CML Compatible Data Input and Output Interface
- Operating Temperature: -40 to 85 Celsius
- RoHS Compliant and Lead-Free



#### Applications:

- GPON OLT
- Access and Enterprise

#### Product Description

This Cisco® SFP-GPON-B compatible SFP transceiver provides 2.5Gbps/1.25Gbps-B+ throughput up to 20km over single-mode fiber (SMF) using a wavelength of 1490nmTx/1310nmRx via an SC 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 Cisco®. 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.

### Absolute Maximum Ratings

| Parameter                  | Symbol           | Min. | Typ.      | Max.              | Unit | Notes |
|----------------------------|------------------|------|-----------|-------------------|------|-------|
| Maximum Supply Voltage     | V <sub>cc</sub>  | -0.5 |           | 4.0               | V    | 1     |
| Storage Temperature        | T <sub>sto</sub> | -40  |           | 85                | °C   | 2     |
| Operating Case Temperature | T <sub>op</sub>  | 0    |           | 70                | °C   |       |
| Data Rate                  | DR               |      | 2488/1244 |                   | Mbps | 3     |
| Bit Error Rate             | BER              |      |           | 10 <sup>-10</sup> |      |       |

### Notes:

1. For electrical power interface
2. Ambient temperature
3. Downstream/Upstream

### Electrical Characteristics (V<sub>cc</sub>=3.14V to 3.46V, T<sub>c</sub>=0°C to 70°C)

| Parameter                      | Symbol               | Min. | Typ. | Max.            | Unit | Notes |
|--------------------------------|----------------------|------|------|-----------------|------|-------|
| Input Voltage                  | V <sub>cc</sub>      | 3.14 | 3.30 | 3.46            | V    |       |
| Power Supply Current           | I <sub>cc</sub>      |      |      | 450             | mA   |       |
| Differential data input swing  | V <sub>in,pp</sub>   | 200  |      | 1600            | mV   |       |
| Input differential impedance   | R <sub>in</sub>      |      | 100  |                 | Ω    |       |
| Differential data output swing | V <sub>out, pp</sub> | 400  |      | 1600            | mV   |       |
| Input Signal Level (LVTTL H)   | V                    | 2.0  |      | V <sub>CC</sub> | V    |       |
| Input Signal Level (LVTTL L)   | V                    | 0    |      | 0.8             |      |       |
| Output Signal Level (LVTTL H)  | V                    | 2.4  |      | V <sub>CC</sub> | V    |       |
| Output Signal Level (LVTTL L)  | V                    | 0    |      | 0.4             | V    |       |

**Optical Characteristics** ( $V_{CC}=3.14V$  to  $3.46V$ ,  $T_C=0^{\circ}C$  to  $70^{\circ}C$ )

| Parameter                           | Symbol                             | Min. | Typ. | Max.               | Unit | Notes |
|-------------------------------------|------------------------------------|------|------|--------------------|------|-------|
| Transmitter                         |                                    |      |      |                    |      |       |
| Transmitter Type                    | 1490nm DFB Laser with Isolator     |      |      |                    |      | 1     |
| Downstream Signaling Speed          | STX                                |      | 2488 |                    | Mb/s |       |
| Output Optical Power                | PTX                                | 1.5  |      | 5                  | dBm  | 2     |
| Optical Output with TX OFF          | Pout_off                           |      |      | -40                | dBm  |       |
| Optical Extinction Ratio            | ER                                 | 8.2  |      |                    | dB   |       |
| Optical Center Wavelength           | λc                                 | 1480 |      | 1500               | nm   |       |
| Spectral Width (-20dB)              | Δλ                                 |      |      | 1                  | nm   |       |
| Side Mode Suppression Ratio         | SMSR                               | 30   |      |                    | dB   |       |
| Output Eye                          | Compliant with G.984. 2            |      |      | Data Rate=2488Mb/s |      |       |
| Receiver                            |                                    |      |      |                    |      |       |
| Receiver Type                       | 1310nm APD/TIA burst-mode Receiver |      |      |                    |      |       |
| Signaling Speed                     | Srx                                |      | 1244 |                    | MB/s |       |
| Optical Center Wavelength           | λc                                 | 1280 | 1310 | 1360               | Nm   |       |
| Average Rx Sensitivity @1244Mb/s    | Rx_sen                             |      |      | -28                | dBm  | 3     |
| Burst Sensitivity Receiver Overload | Pmax                               | -8   |      |                    | dBm  |       |
| Receiver Burst Mode Dynamic Range   |                                    | 15   |      |                    | dB   |       |
| LOS Assert                          | LOS_A                              | -45  |      |                    | dBm  |       |
| LOS De-Assert                       | LOS_D                              |      |      | -30                | dBm  |       |
| LOS Hysteresis                      | LOS_H                              | 0.5  |      |                    | dB   |       |

**Notes:**

1. Continuous-mode
2. Class 1 Product
3. @BER  $10^{-10}$  PRBS  $2^{23}-1$

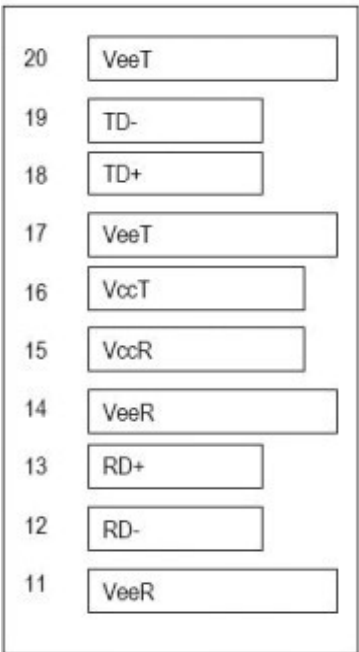
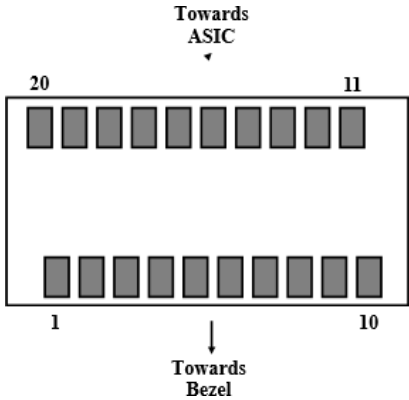
## Pin Descriptions

| Pin | Symbol       | Name/Descriptions                                          | Ref. |
|-----|--------------|------------------------------------------------------------|------|
| 1   | VEET         | Transmitter ground (common with receiver ground)           | 1    |
| 2   | TFAULT       | Transmitter Fault.                                         |      |
| 3   | TDIS         | Transmitter Disable. Laser output disabled on high or open | 2    |
| 4   | MOD_DEF (2)  | Module Definition 2. Data line for serial ID               | 3    |
| 5   | MOD_DEF (1)  | Module Definition 1. Clock line for serial ID              | 3    |
| 6   | MOD_DEF (0)  | Module Definition 0. Grounded within the module            | 3    |
| 7   | RESET        | Receiver Reset                                             | 4    |
| 8   | BPD          | Burst Packet Detect                                        | 5    |
| 9   | RSSI Trigger | RSSI Trigger Signal From Host                              | 6    |
| 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    |

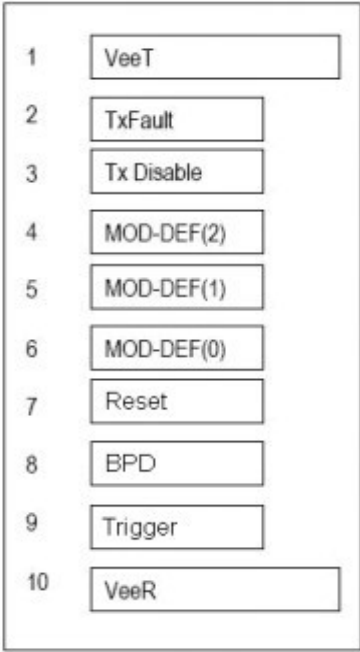
## Notes:

1. Circuit ground is isolated from chassis ground
2. Disabled:  $T_{DIS} > 2V$  or open, Enabled:  $T_{DIS} < 0.8V$
3. Should Be pulled up with 4.7k – 10k ohm on host board to a voltage between 2V and 3.6V
4. Reset is a LVTTTL input which is used to clear receiver status before receiving the next burst packet
5. BPD is a LVTTTL output. High Level indicates that burst packet is detected by the receiver
6. RSSI Trigger is a LVTTTL input from host for starting ADC of digital RSSI circuit to sample the analog RSSI signal

Electrical Pad Layout



Top of Board



Bottom of Board (as viewed thru top of board)

### Digital Diagnostic Functions

This transceiver supports the 2-wire serial communication protocol as defined in the SFP MSA. Digital diagnostic information is accessible over the 2-wire interface at the address 0xA2. Digital diagnostics for this module are internally calibrated by default. A micro controller unit inside the transceiver gathers the monitoring information and reports the status of transceiver.

**Transceiver Temperature**, internally measured, represented as a 16 bit signed twos complement value in increments of 1/256 degrees Celsius, Temperature accuracy is better than  $\pm 3$  degrees Celsius over specified operating temperature and voltage.

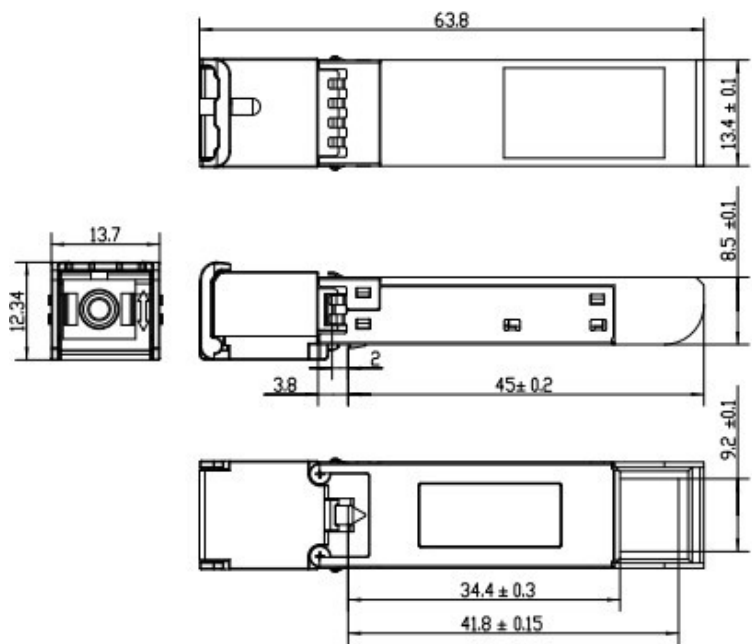
**Transceiver Supply Power**, internally measured, represented as a 16 bit unsigned integer with the voltage defined as the full 16 bit value (0 – 65535) with LSB equal to 100  $\mu$ Volt, yielding a total range of 0 to +6.55 Volts.

**Transceiver TX bias current**, internally measured, represented as a 16 bit unsigned integer with the current defined as the full 16 bit value (0 – 65535) with LSB equal to 2  $\mu$ A, yielding a total range of 0 to 131mA. Accuracy is better than  $\pm 10\%$  over specified operating temperature and voltage.

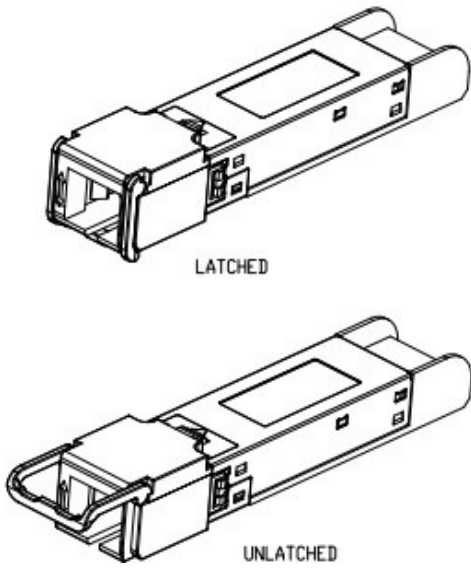
**Transceiver TX output power**, internally measured, represented as a 16 bit unsigned integer with the power defined as the full 16 bit value (0 – 65535) with LSB equal to 0.1  $\mu$ W. Data is assumed to be based on measurement of laser monitor photodiode current. Accuracy is better than  $\pm 3$ dB over specified temperature and voltage. Data is not valid when the transmitter is disabled.

**Transceiver RX received optical power**, internally measured, represented as a 16 bit unsigned integer with the power defined as the full 16 bit 35 value (0 – 65535) with LSB equal to 0.1  $\mu$ W. Accuracy is better than  $\pm 3$ dB over specified temperature and voltage.

**Mechanical Specifications**



unit:millimeter



**ALL DIMENSIONS ARE ±0.2mm UNLESS OTHERWISE SPECIFIED UNIT: mm**

## **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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