

## SFP-10GB-DW63-80-I-C-AO

Cisco® Compatible TAA 10GBase-DWDM SFP+ Transceiver C-Band Channel DW63 50GHz (SMF, 1527.22nm, 80km, LC, DOM, -40 to 85C)

### Features

- SFF-8432 and SFF-8472 Compliance
- Single-mode Fiber
- Duplex LC Connector
- Hot Pluggable
- Metal with Lower EMI
- Industrial Temperature -40 to +85 Celsius
- RoHS Compliant and Lead Free
- Excellent ESD Protection



### Applications

- 8x/10x Fibre Channel
- 10x Gigabit Ethernet over DWDM
- Access and Enterprise

### Product Description

This Cisco® SFP+ transceiver provides 10GBase-DWDM throughput up to 80km over single-mode fiber (SMF) using a wavelength of 1527.22nm via an LC connector. It is guaranteed to be 100% compatible with the equivalent Cisco® 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."



## 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.

## Wavelength Guide (100GHz ITU-T Channel)

| ITU Channel # | Frequency (THZ) | Center Wavelength (nm) |
|---------------|-----------------|------------------------|
| 64            | 196.4           | 1526.44                |
| 63            | 196.3           | 1527.22                |
| 62            | 196.2           | 1527.99                |
| 61            | 196.1           | 1528.77                |

## Absolute Maximum Ratings

| Parameter                  | Symbol | Min. | Typ. | Max.               | Unit | Notes |
|----------------------------|--------|------|------|--------------------|------|-------|
| Maximum Supply Voltage     | Vcc    | -0.5 |      | 3.6                | V    |       |
| Storage Temperature        | Tstg   | -40  |      | 85                 | °C   |       |
| Operating Case Temperature | Tc     | -40  |      | 85                 | °C   |       |
| Operating Humidity         | RH     | 0    |      | 95                 | %    |       |
| Bit Rate                   | BR     |      |      | 11.1               | Gbps | 1     |
| Bit Error Ratio            | BER    |      |      | 10e <sup>-12</sup> |      | 2     |
| Max. Supported Link Length | LMAX   |      |      | 80                 | km   | 1     |

### Notes:

1. 10GBase-ZR, 10GBase-ZW, and 1200-SM-LL-L 10GFC.
2. Tested with a 2<sup>31</sup>-1 PRBS.

## Electrical Characteristics

| Parameter                    | Symbol              | Min. | Typ. | Max. | Unit     | Notes |
|------------------------------|---------------------|------|------|------|----------|-------|
| Power Supply Voltage         | Vcc                 | 3.14 | 3.3  | 3.46 | V        |       |
| Module Power                 | Icc                 |      |      | 2000 | mW       |       |
| <b>Transmitter</b>           |                     |      |      |      |          |       |
| Input Differential Impedance | ZIN                 | 80   | 100  | 120  | Ω        |       |
| Differential Data Input      | VIN                 | 180  |      | 700  | mVp-p    |       |
| Tx_Fault                     | Assert              | VFA  | 2.0  |      | Host_Vcc | V     |
|                              | De-Assert           | VFDA | Vee  |      | Vee+0.4  | V     |
| Tx_Disable                   | Transmitter Disable | VIH  | 2.0  |      | Host_Vcc | V     |
|                              | Transmitter Enable  | VIL  | Vee  |      | Vee+0.8  | V     |
| <b>Receiver</b>              |                     |      |      |      |          |       |
| Differential Data Output     | VOUT                | 350  |      | 850  | mVp-p    |       |
| Output Rise Time             | Tr                  | 25   |      |      | pS       |       |
| Output Fall Time             | Tf                  | 25   |      |      | pS       |       |
| LOS Fault                    | LOS                 | 2.0  |      |      | Host_Vcc | V     |
| LOS Normal                   | LOS                 | Vee  |      |      | Vee+0.4  | V     |

## Optical Characteristics

| Parameter                        | Symbol            | Min.    | Typ. | Max.    | Unit  | Notes |
|----------------------------------|-------------------|---------|------|---------|-------|-------|
| <b>Transmitter</b>               |                   |         |      |         |       |       |
| Average Launch Optical Power     | POUT              | 0       |      | 4       | dBm   | 1     |
| Center Wavelength Range          | $\lambda_C$       | 1526.44 |      | 1563.86 | nm    |       |
| Center Wavelength Spacing        |                   |         | 100  |         | GHz   |       |
| Center Wavelength Tolerance      | $\Delta\lambda_C$ | x-100   | x    | x-100   | pm    |       |
| Extinction Ratio                 | ER                | 8.2     |      |         | dB    |       |
| Side-Mode Suppression Ratio      | SMSR              | 30      |      |         | dB    |       |
| Relative Intensity Noise         | RIN               |         |      | -128    | dB/Hz |       |
| Average Launch Power of Off Tx   | Poff              |         |      | -30     | dBm   |       |
| <b>Receiver</b>                  |                   |         |      |         |       |       |
| Optical Center Wavelength        | $\lambda_C$       | 1260    |      | 1620    | nm    |       |
| Receiver Sensitivity             | RSENSE            |         |      | -24     | dBm   | 2     |
| Receiver Sensitivity @80km Fiber | RSENSE            |         |      | -21     | dBm   | 3     |
| Receiver Overload                | P <sub>OL</sub>   | -7      |      |         | dBm   |       |
| Optical Return Loss              | ORL               | 27      |      |         | dB    |       |
| LOS De-Assert                    | LOSD              |         |      | -27     | dBm   |       |
| LOS Assert                       | LOSA              | -37     |      |         | dBm   |       |
| LOS Hysteresis                   |                   | 0.5     |      |         | dB    |       |

### Notes:

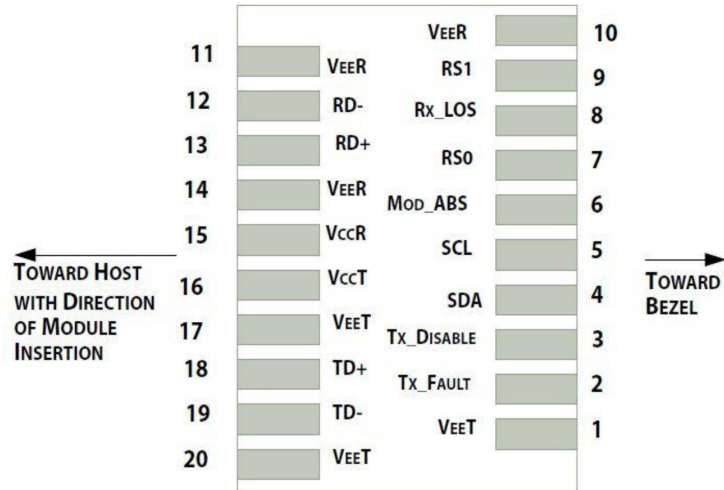
1. The optical power is launched into the SMF.
2. Measured at 1528-1600nm, ER>9dBm, PRBS 2<sup>31</sup>-1, and BER better than or equal to 10E<sup>-12</sup>.
3. Loopback using 80km fiber (SMF-28).

## Pin Descriptions

| Pin | Symbol     | Name/Description   | Note |
|-----|------------|--|------|
| 1   | VeeT       | Transmitter Ground (Common with Receiver Ground).                          | 1    |
| 2   | Tx_Fault   | Transmitter Fault. LVTTTL-O.   | 2    |
| 3   | Tx_Disable | Transmitter Disable. Laser output disabled on “high” or “open.” LVTTTL-I.  | 3    |
| 4   | SDA        | 2-Wire Serial Interface Data (Same as MOD-DEF2 in INF-8074i). LVTTTL-I/O.  |      |
| 5   | SCL        | 2-Wire Serial Interface Clock (Same as MOD-DEF2 in INF-8074i). LVTTTL-I.   |      |
| 6   | MOD_ABS    | Module Absent. Connect to the VeeT or VeeR in the module.                  | 4    |
| 7   | RS0        | Rate Select 0. Not Used.   | 5    |
| 8   | LOS        | Loss of Signal Indication. “Logic 0” indicates normal operation. LVTTTL-O. | 2    |
| 9   | RS1        | Rate Select 1. Not Used.   | 5    |
| 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. CML-O.                             |      |
| 13  | RD+        | Receiver Non-inverted Data Out. AC Coupled. CML-O.                         |      |
| 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. CML-I.                       |      |
| 19  | TD-        | Transmitter Inverted Data In. AC Coupled. CML-O.                           |      |
| 20  | VeeT       | Transmitter Ground (Common with Receiver Ground).                          | 1    |

### Notes:

1. The module signal ground contacts, VeeR and VeeT, should be isolated from the module case.
2. This contact is an open collector/drain output and should be pulled up to the Vcc\_Host with resistor in the range 4.7kΩ-10kΩ. Pull-ups can be connected to one or several power supplies; however, the host board design shall ensure that no module contract has voltage exceeding module VccT/R+0.5V.
3. Tx\_Disable is an input contact with a 4.7kΩ-10kΩ pull-up resistor to the VccT inside the module.
4. MOD\_ABS is connected to the VeeT or VeeR in the SFP+ module. The host may pull the contract up to Host\_Vcc with a resistor in the range from 4.7kΩ-10kΩ. MOD\_ABS is asserted “high” when the SFP+ module is physically absent from a host slot.
5. Internally pulled down per SFF-8431.

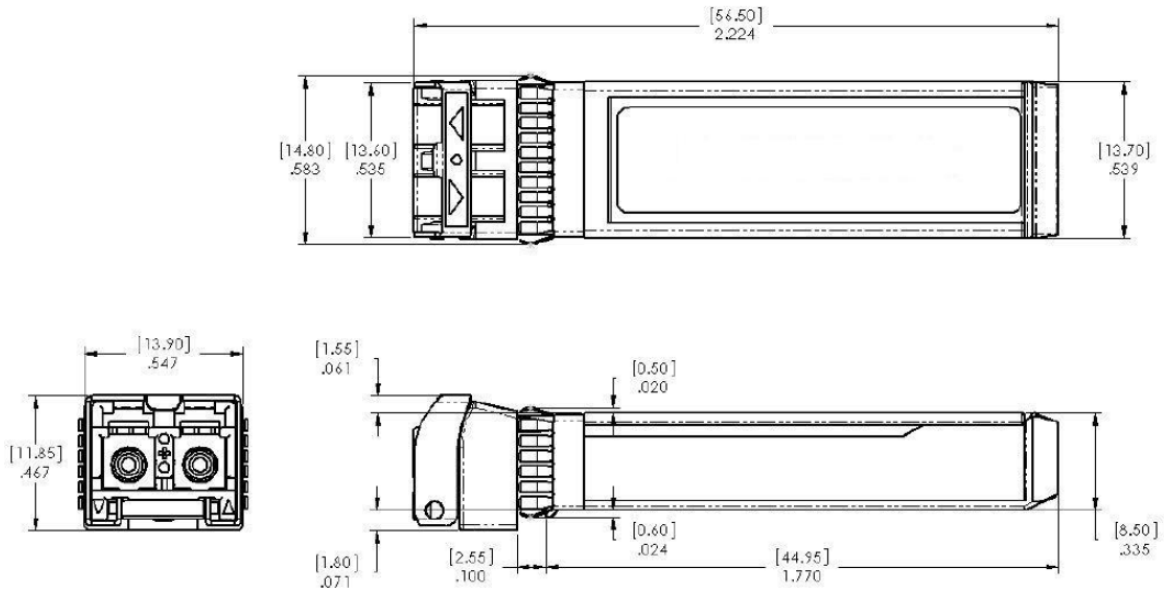


Pin-Out of Connector Block on the Host Board

**Recommended Circuit Schematic**

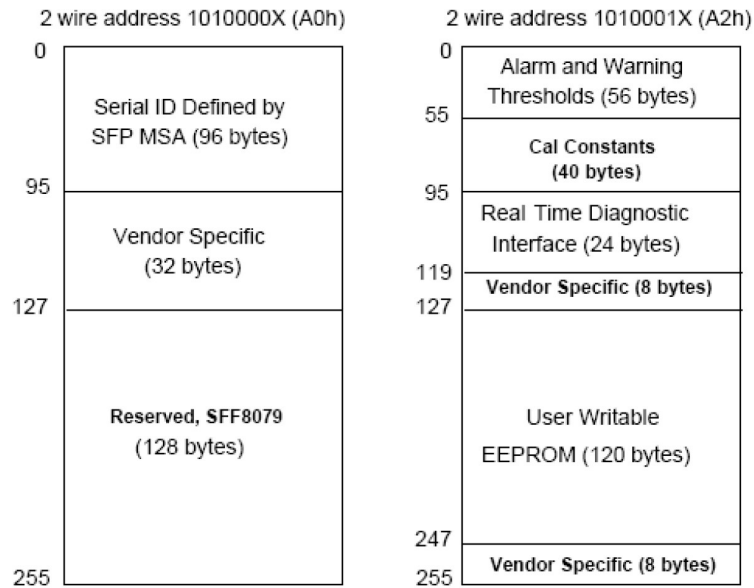


## Mechanical Specifications



## EEPROM Information

EEPROM memory map-specific data field description is as below:



## 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 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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