

## SFP-1GB-CW-39-160-DE-AO

Dell® Compatible TAA 1000Base-CWDM SFP Transceiver (SMF, 1390nm, 160km, LC, DOM)

### Features

- INF-8074 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

- 1x Fibre Channel
- Gigabit Ethernet over CWDM
- Access, Metro and Enterprise

### Product Description

This Dell® Compatible SFP transceiver provides 1000Base-CWDM throughput up to 160km over single-mode fiber (SMF) using a wavelength of 1390nm via an LC connector. It can operate at temperatures between 0 and 70C. The listed reach has been determined using a link budget calculation and tested in a standard environment. Actual link distances achieved will be dependent upon the deployed environment. All of our transceivers are built to comply with Multi-Source Agreement (MSA) standards and are uniquely serialized and tested for data-traffic and application to ensure 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.

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.")



## Absolute Maximum Ratings

| Parameter                  | Symbol | Min.  | Typ. | Max.       | Unit | Notes |
|----------------------------|--------|-------|------|------------|------|-------|
| Data Rate                  | DR     | 0.622 |      | 1.25       | Gbps |       |
| Bit Error Rate             | BER    |       |      | $10^{-12}$ |      |       |
| Operating Case Temperature | Tc     | 0     |      | 70         | C    | 1, 4  |
| Storage Temperature        | Tstg   | -40   |      | 85         | C    | 2     |
| Supply Current             | Icc    |       | 200  | 300        | mA   | 3     |
| Maximum Voltage            | VMAX   | -0.5  |      | 4          | V    | 3     |

### Notes:

1. Case temperature.
2. Ambient temperature.
3. For the electrical power interface.
4. Commercial temperature.

## Electrical Characteristics

| Parameter                      | Symbol   | Min.    | Typ. | Max.     | Unit     | Notes |
|--------------------------------|----------|---------|------|----------|----------|-------|
| Input Voltage                  | Vcc      | 3.14    | 3.3  | 3.46     | V        |       |
| Supply Current                 | Icc      |         | 200  | 300      | mA       | 3     |
| Transmitter                    |          |         |      |          |          |       |
| Input Differential Impedance   | RIN      |         | 100  |          | $\Omega$ |       |
| Single-Ended Data Input Swing  | VIN,pp   | 250     |      | 1200     | mV       |       |
| Transmit Disable Voltage       | VD       | Vcc-1.3 |      | Vcc      | V        |       |
| Transmit Enable Voltage        | VEN      | Vee     |      | Vee+0.8  | V        |       |
| Transmit Disable Assert Time   |          |         |      | 10       | us       |       |
| Receiver                       |          |         |      |          |          |       |
| Single-Ended Data Output Swing | VOOUT,pp | 300     | 400  | 800      | mV       |       |
| Data Output Rise/Fall Time     | Tr/Tf    |         | 100  | 175      | ps       |       |
| LOS Asserted                   | VLOSA    | Vcc-0.5 |      | Host_Vcc | V        |       |
| LOS De-Asserted                | VLOSD    | Vee     |      | Vee+0.5  | V        |       |

## Optical Characteristics

| Parameter                       | Symbol                    | Min. | Typ. | Max. | Unit  | Notes |
|---------------------------------|---------------------------|------|------|------|-------|-------|
| Transmitter                     |                           |      |      |      |       |       |
| Output Optical Power            | PTX                       | 3    |      | 7    | dBm   | 1     |
| Optical Center Wavelength       | $\lambda_C$               | 1385 | 1391 | 1397 | nm    |       |
| Extinction Ratio                | ER                        | 9    |      |      | dB    |       |
| Side-Mode Suppression Ratio     | SMSR                      | 30   |      |      | dB    |       |
| Spectral Width (-20dB)          | $\Delta\lambda$           |      |      | 1    | nm    |       |
| Optical Rise/Fall Time (20-80%) | $T_r/T_f$                 |      |      | 180  | ps    |       |
| Relative Intensity Noise        | RIN                       |      |      | -120 | dB/Hz |       |
| Transmitter Jitter (Pk-Pk)      | TJ                        |      |      | 100  | ps    |       |
| Output Eye                      | Compliant with IEEE 802.3 |      |      |      |       |       |
| Receiver                        |                           |      |      |      |       |       |
| Optical Input Wavelength        | $\lambda_C$               | 1270 |      | 1620 | nm    |       |
| Receiver Sensitivity            | Rx_SEN                    |      |      | -34  | dBm   | 2     |
| Receiver Overload               | POL                       | -7   |      |      | dBm   |       |
| LOS Assert                      | LOSA                      | -42  |      |      | dBm   |       |
| LOS De-Assert                   | LOSD                      |      |      | -34  | dBm   |       |
| LOS Hysteresis                  | LOSH                      | 0.5  |      |      | dB    |       |

### Notes:

1. Average launch power.
2. Measured with a 2<sup>7</sup>-1 test pattern over 120km @1.25Gbps with BER<10<sup>-12</sup>.

## Pin Descriptions

| Pin | Symbol     | Name/Description                                                 | Notes |
|-----|------------|------------------------------------------------------------------|-------|
| 1   | VeeT       | Transmitter Ground (Common with Receiver Ground).                | 1     |
| 2   | Tx_Fault   | Transmitter Fault.                                               |       |
| 3   | Tx_Disable | Transmitter Disable. Laser output disabled on “high” or “open.”  | 2     |
| 4   | SDA        | 2-Wire Serial Interface Data.                                    | 3     |
| 5   | SCL        | 2-Wire Serial Interface Clock.                                   | 3     |
| 6   | MOD_ABS    | Module Absent. Grounded within the module.                       | 3     |
| 7   | RS0        | No Connection Required.                                          |       |
| 8   | LOS        | Loss of Signal Indication. “Logic 0” indicates normal operation. | 4     |
| 9   | RS1        | No Connection Required.                                          | 1     |
| 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. The circuit ground is isolated from the chassis ground.
2. Disabled: TDIS>2V or open, enabled: TDIS<0.8V.
3. Should be pulled up with 4.7kΩ to 10kΩ on the host board to a voltage between 2V and 3.6V.
4. LOS is open collector output.

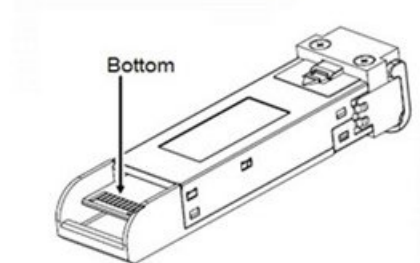
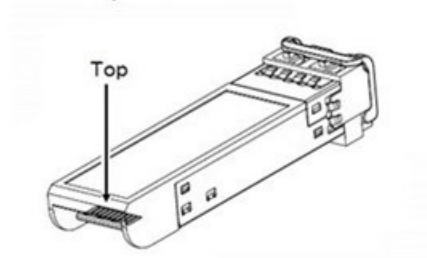
## Electrical Pad Layout



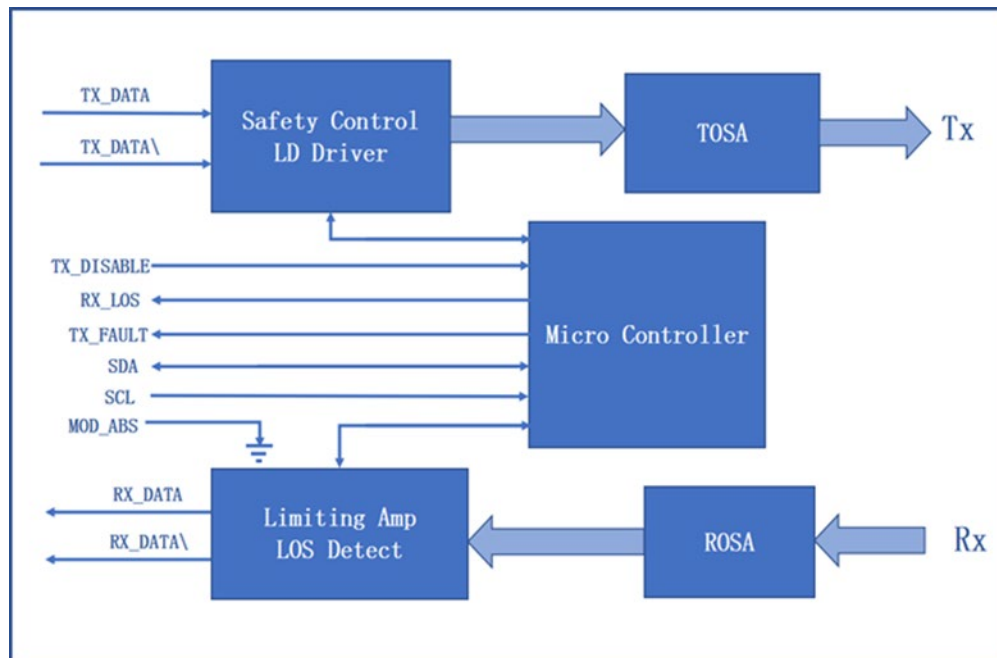
Top of Board



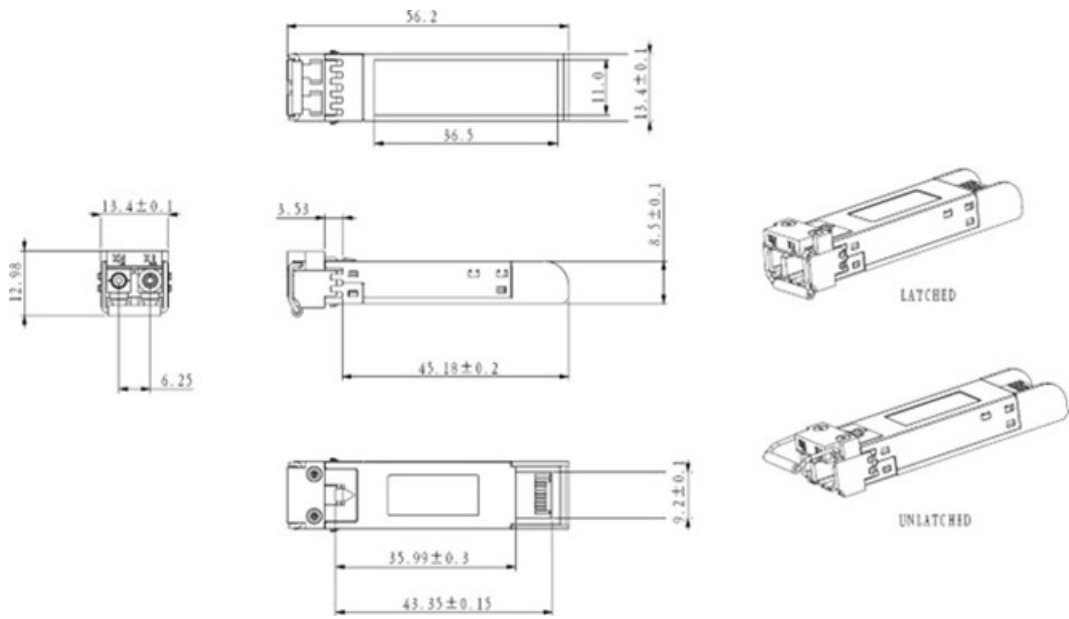
Bottom of Board



## Block Diagram of Transceiver



Mechanical Specifications



All dimensions are ±0.2mm unless otherwise specified.  
Unit: mm

## 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 ingrained 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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