

### SFP-10GB-BX-U-20-E-C-AO

Cisco® Compatible TAA 10GBase-BX SFP+ Transceiver (SMF, 1270nmTx/1330nmRx, 20km, LC, DOM, -20 to 85C)

#### Features

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



#### Applications

- 10GBase Ethernet

#### Product Description

This Cisco® SFP+ transceiver provides 10GBase-BX throughput up to 20km over single-mode fiber (SMF) using a wavelength of 1270nmTx/1330nmRx 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."



## Absolute Maximum Ratings

| Parameter                  | Symbol | Min. | Typ. | Max.              | Unit | Notes |
|----------------------------|--------|------|------|-------------------|------|-------|
| Maximum Supply Voltage     | Vcc    | -0.5 |      | 4                 | V    | 1     |
| Storage Temperature        | Tstg   | -40  |      | 85                | °C   |       |
| Operating Case Temperature | Tc     | -40  |      | 85                | °C   |       |
| Data Rate                  | DR     | 9.83 |      | 11.3              | Gbps |       |
| Bit Error Rate             | BER    |      |      | 10 <sup>-12</sup> |      |       |

### Notes:

1. For the electrical power interface.
2. IEEE 802.3ae.

## Electrical Characteristics

| Parameter                           | Symbol  | Min. | Typ. | Max.     | Unit | Notes |
|-------------------------------------|---------|------|------|----------|------|-------|
| Power Supply Voltage                | Vcc     | 3.14 | 3.3  | 3.46     | V    |       |
| Power Supply Current                | Icc     |      | 250  | 360      | mA   |       |
| Transmitter                         |         |      |      |          |      |       |
| Input Differential Impedance        | RIN     |      | 100  |          | Ω    |       |
| Differential Data Input Swing       | VIN,pp  | 180  |      | 700      | mV   |       |
| Transmit Disable Voltage            | VD      | 2    |      | Vcc      | V    |       |
| Transmit Enable Voltage             | VEN     | Vee  |      | Vee+0.8  | V    |       |
| Receiver                            |         |      |      |          |      |       |
| Differential Data Output Swing      | VOUT,pp | 300  |      | 850      | mV   |       |
| Data Output Rise/Fall Time (20-80%) | Tr/Tf   | 28   |      |          | ps   |       |
| LOS Assert                          | VLOSA   | 2    |      | Host_Vcc | V    |       |
| LOS De-Assert                       | VLOSD   | Vee  |      | Vee+0.5  | V    |       |

## Optical Characteristics

| Parameter                       | Symbol                                 | Min. | Typ. | Max.  | Unit  | Notes |
|---------------------------------|----------------------------------------|------|------|-------|-------|-------|
| Transmitter                     |                                        |      |      |       |       |       |
| Output Optical Power            | PTx                                    | -8.2 |      | 0.5   | dB    | 1     |
| Optical Center Wavelength       | λC                                     | 1260 | 1270 | 1280  | nm    |       |
| Extinction Ratio                | ER                                     | 3.5  |      |       | dB    |       |
| Spectral Width (-20dB)          | Δλ                                     |      |      | 0.6   | nm    |       |
| Side-Mode Suppression Ratio     | SMSR                                   | 30   |      |       | dB    |       |
| Relative Intensity Noise        | RIN                                    |      |      | -128  | dB/Hz |       |
| Transmitter Dispersion Penalty  | TDP                                    |      |      | 3.2   | dB    |       |
| Launch Power of Off Transmitter | Poff                                   |      |      | -30   | dBm   | 2     |
| Transmitter Jitter              | According to IEEE 802.3ae Requirements |      |      |       |       |       |
| Receiver                        |                                        |      |      |       |       |       |
| Receiver Overload               | Pol                                    | 0.5  |      |       | dBm   |       |
| Optical Center Wavelength       | λC                                     | 1320 | 1330 | 1340  | nm    |       |
| Receiver Sensitivity            | Rx_sen                                 |      |      | -14.4 | dBm   | 3     |
| Receiver Reflectance            | TRrx                                   |      |      | -12   | dB    |       |
| LOS Assert                      | LOSA                                   | -30  |      |       | dBm   |       |
| LOS De-Assert                   | LOSD                                   |      |      | -17   | dBm   |       |
| LOS Hysteresis                  | LOSH                                   | 0.5  |      |       | dB    |       |

### Notes:

1. Average. Normal temperature optical power range: -2~0.5dBm.
2. Average.
3. Average. Measured with worst ER: BER<10<sup>-12</sup> and 2<sup>31</sup>-1 PRBS.

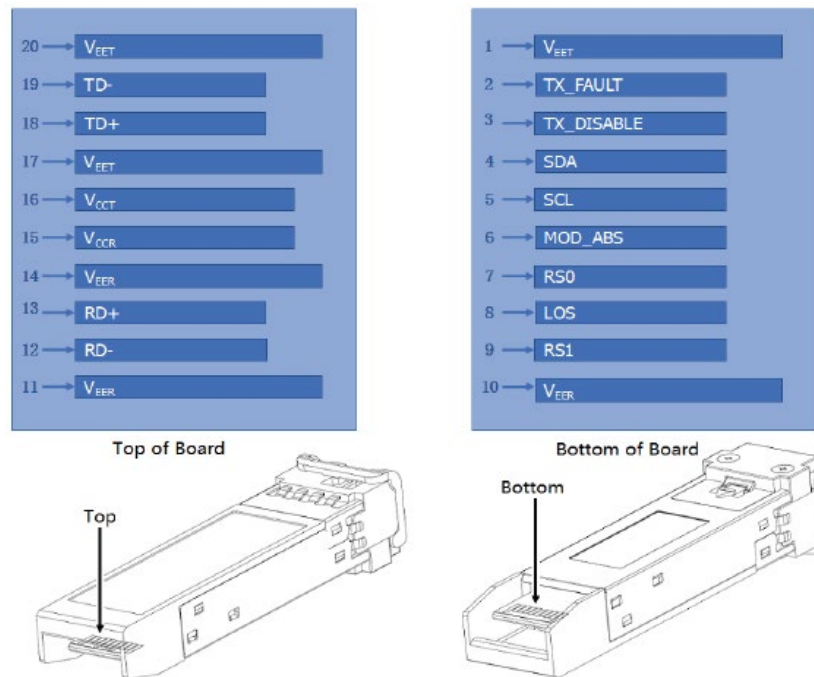
## Pin Descriptions

| Pin | Symbol     | Name/Description                                                  | Notes |
|-----|------------|-------------------------------------------------------------------|-------|
| 1   | VeeT       | Transmitter Ground (Common with Receiver Ground).                 | 1     |
| 2   | Tx_Fault   | Transmitter Fault.                                                | 2     |
| 3   | Tx_Disable | Transmitter Disable.                                              | 3     |
| 4   | SDA        | 2-Wire Serial Interface Data.                                     | 4     |
| 5   | SCL        | 2-Wire Serial Interface Clock.                                    | 4     |
| 6   | MOD_ABS    | Module Absent. Grounded within the module.                        | 4     |
| 7   | RS0        | No Connection Required.                                           |       |
| 8   | LOS        | Loss of Signal Indication. "Logic 0 " indicates normal operation. | 5     |
| 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     |

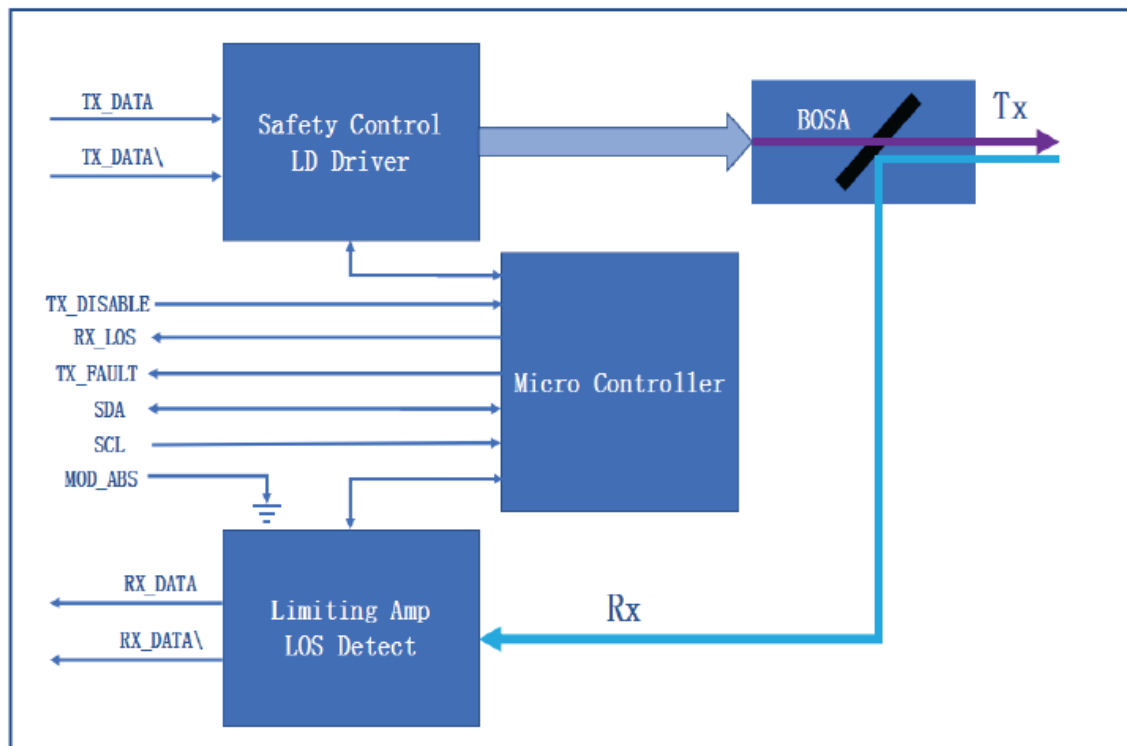
### Notes:

1. The circuit ground is isolated from the chassis ground.
2. Tx\_Fault is the open collector output and should be pulled up with 4.7k $\Omega$  to 10k $\Omega$  on the host board to a voltage between 2V and Vcc+0.3V.
3. Disabled: Tdis>2V or open. Enabled: Tdis<0.8V.
4. Should be pulled up with 4.7k $\Omega$  to 10k $\Omega$  on the host board to a voltage between 2V and Vcc+0.3V.
5. LOS is open collector output and should be pulled up with 4.7k $\Omega$  to 10k $\Omega$  on the host board to a voltage between 2V and Vcc0.3V. Logic "0" indicates normal operation. Logic "1" indicates that the receiver signal is lost.

## Pin Assignments



## Block Diagram of Transceiver



Mechanical Specifications



## 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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