

### SFP-10GB-BXD32-20-IN-AO

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

#### Features

- SFF-8432 and SFF-8472 Compliance
- Simplex 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

- 8x/10x Fibre Channel
- 10GBase-BX Ethernet
- Access, Metro and Enterprise

#### Product Description

This Intel® compatible SFP+ transceiver provides 10GBase-BX throughput up to 20km over single-mode fiber (SMF) using a wavelength of 1330nmTx/1270nmRx via an LC connector. This bidirectional unit must be used with another transceiver or network appliance of complementing wavelengths. 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 Intel®. 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.

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     | 0    |      | 70                | °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                                     | 1320 | 1330 | 1340  | 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                                     | 1260 | 1270 | 1280  | 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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