

SFP-10GB-BX-D-HPX-AO

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

Features

- Operating Data Rate up to 10.31Gbps
- Single 3.3V Power Supply and TTL Logic Interface
- 1330nm DFB Transmitter/1270nm PIN Receiver
- LC Connector Interface
- Power Dissipation: 1.5W
- Hot Pluggable
- RoHS Compliant and Lead-Free
- Operating temperature: 0C to 70C



Applications

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

Product Description

This HP® compatible SFP+ transceiver provides 10GBase-BX throughput up to 10km 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 is guaranteed to be 100% compatible with the equivalent HP® 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. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

AddOn's transceivers are RoHS compliant and lead-free.

Absolute Maximum Ratings

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Notes |
|----------------------------|--------|------|---------------|------|------|-------|
| Storage Temperature | Tstg | -40 | | 85 | °C | |
| Operating Case Temperature | Tc | 0 | | 70 | °C | |
| Relative Humidity | RH | 5 | | 95 | % | |
| Supply Voltage | Vcc | -0.5 | | 3.6 | V | |
| Data Rate | | | 9.953/10.3125 | | | |
| Power Budget | | | 12 | | dB | |

Electrical Characteristics

| Parameter | | Symbol | Min. | Typ. | Max. | Unit | Notes |
|-------------------------------|------|--------|------|------|---------|-------|----------------|
| Power Supply Voltage | | Vcc | 3.15 | 3.3 | 3.45 | V | |
| Power Supply Current | | Icc | | | 455 | mA | |
| Surge Current | | Isurge | | | 30 | mA | |
| Transmitter | | | | | | | |
| Differential CML Inputs | | VIN | 150 | | 1200 | mVp-p | 1 |
| Input AC Common-Mode Voltage | | | 0 | | 25 | mV | RMS |
| Differential Input Impedance | | ZIN | 85 | 100 | 115 | Ω | 2 |
| Tx_Disable | High | | 2 | | Vcc | V | |
| | Low | | 0 | | 0.8 | | |
| Tx_Fault | High | | 2 | | Vcc+0.3 | V | 3 |
| | Low | | 0 | | 0.5 | | |
| Receiver | | | | | | | |
| Differential CML Outputs | | VOUT | 350 | | 700 | mVp-p | 4 |
| Differential Output Impedance | | ZOUT | 85 | 100 | 115 | Ω | |
| Rx_LOS | High | | 2 | | Vcc+0.3 | | 3 |
| | Low | | 0 | | 0.8 | | |
| MOD_DEF (0.2) | | VOH | 2.5 | | | V | |
| | | VOL | 0 | | 0.5 | | With Serial ID |

Notes:

1. AC coupled inputs.
2. RIN>100kΩ @DC.
3. Io=400μA: Host_Vcc. Lo=-4.0mA.
4. AC coupled outputs.

Optical Characteristics

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Notes |
|----------------------------------|-----------------|------|------|------|------|-------|
| Transmitter | | | | | | |
| Center Wavelength | λ_C | 1320 | 1330 | 1340 | nm | |
| Spectral Width (-20dB) | $\Delta\lambda$ | | | 1 | nm | |
| Average Output Power | POUT | -2 | | 3 | dBm | 1 |
| Extinction Ratio | ER | 3.5 | | | dB | |
| Average Power of Off Transmitter | Poff | | | -30 | dBm | |
| Side-Mode Suppression Ratio | SMSR | 30 | | | dB | |
| Transmitter Dispersion Penalty | TDP | | | 2 | dB | |
| Tx_Disable Assert Time | T_off | | | 10 | us | |
| Receiver | | | | | | |
| Center Wavelength | λ_C | 1260 | 1270 | 1280 | nm | |
| Receiver Sensitivity | Pmin | | | -14 | dBm | 2 |
| Receiver Overload | Pmax | 0.5 | | | dBm | |
| LOS De-Assert | LOSD | | | -16 | dBm | |
| LOS Assert | LOSA | -30 | | | dBm | |
| LOS Hysteresis | LOSH | 0.5 | | | dB | |

Notes:

1. Output is coupled into a 9/125 μ m SMF.
2. Minimum average optical power. Measured at BER less than $1E^{-12}$. The measured pattern is PRBS $2^{31}-1$.

Pin Descriptions

| Pin | Symbol | Name/Description | Plug Seq. | Notes |
|-----|-------------|-----------------------------------------------------------------------------------------------------------------------------------------|-----------|-------|
| 1 | VeeT | Transmitter Ground. | 1 | 5 |
| 2 | Tx_Fault | Transmitter Fault Indication. | 3 | 1 |
| 3 | Tx_Disable | Transmitter Disable. Module disables on “high” or “open.” | 3 | 2 |
| 4 | MOD_DEF2 | Transmitter Disable. 2-Wire Serial ID Interface. | 3 | 3 |
| 5 | MOD_DEF1 | Module Definition 2. 2-Wire Serial ID Interface. | 3 | 3 |
| 6 | MOD_DEF0 | Module Definition 1. | 3 | 3 |
| 7 | Rate Select | Rx Rate Select. LVTTTL. Rate Select 0 optionally controls SFP+ module receiver. This pin is pulled low to VeeT with a >30K resistor. | 3 | |
| 8 | LOS | Loss of Signal. | 3 | 4 |
| 9 | VeeR | Tx Rate Select. LVTTTL. Rate Select 1 optionally controls SFP+ module transmitter. This pin is pulled low to VeeT with a >30K resistor. | 1 | |
| 10 | VeeR | Receiver Ground. | 1 | 5 |
| 11 | VeeR | Receiver Ground. | 1 | 5 |
| 12 | RD- | Inverse Received Data Out. | 3 | 6 |
| 13 | RD+ | Received Data Out. | 3 | 6 |
| 14 | VeeR | Receiver Ground. | 1 | 5 |
| 15 | VccR | 3.3V \pm 5% Receiver Power. | 2 | 7 |
| 16 | VccT | 3.3V \pm 5% Transmitter Power. | 2 | 7 |
| 17 | VeeT | Transmitter Ground. | 1 | 5 |
| 18 | TD+ | Transmit Data In. | 3 | 8 |
| 19 | TD- | Inverse Transmit Data In. | 3 | 8 |
| 20 | VeeT | Transmitter Ground. | 1 | 5 |

Notes:

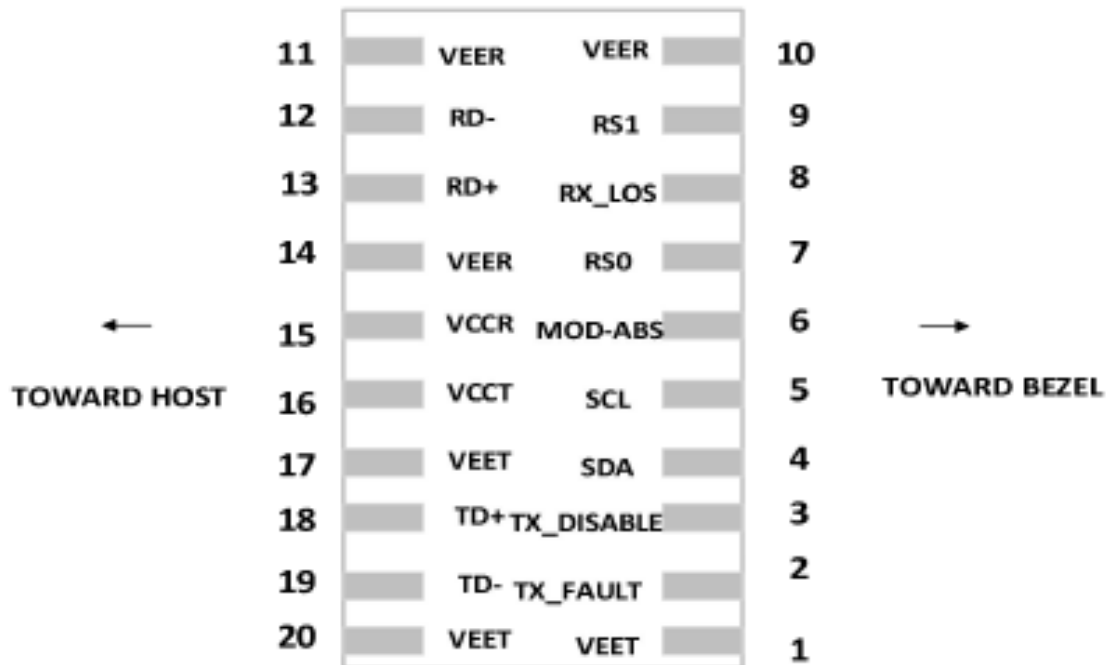
1. Tx_Fault is an open collector/drain output that should be pulled up with a 4.7k Ω to 10k Ω resistor on the host board. Pull-up voltage between 2.0V and VccT/R+0.3V. When high, output indicates a laser fault of some kind. Low indicates normal operation. In the low state, the output will be pulled to <0.8V.
2. Tx_Disable is an input that is used to shut down the transmitter optical output. It is pulled up within the module with a 4.7k Ω to 10k Ω resistor. Its states are:

| | |
|------------------------|-----------------------|
| Low (0V to 0.8V): | Transmitter On |
| (>0.8V and <2V): | Undefined |
| High (2.0V to 3.465V): | Transmitter Disabled |
| Open: | Transmitter Disabled. |
3. Modulation absent. Connected to the VeeT or VeeR in the module.
4. LOS (Loss of Signal) is an open collector/drain output that should be pulled up with a 4.7k Ω to 10k Ω resistor. Pull-up voltage between 2.0V and VccT/R+0.3V. When high, this output indicates the received optical power is below the worst-case receiver sensitivity (as defined by the standard in use).
Low

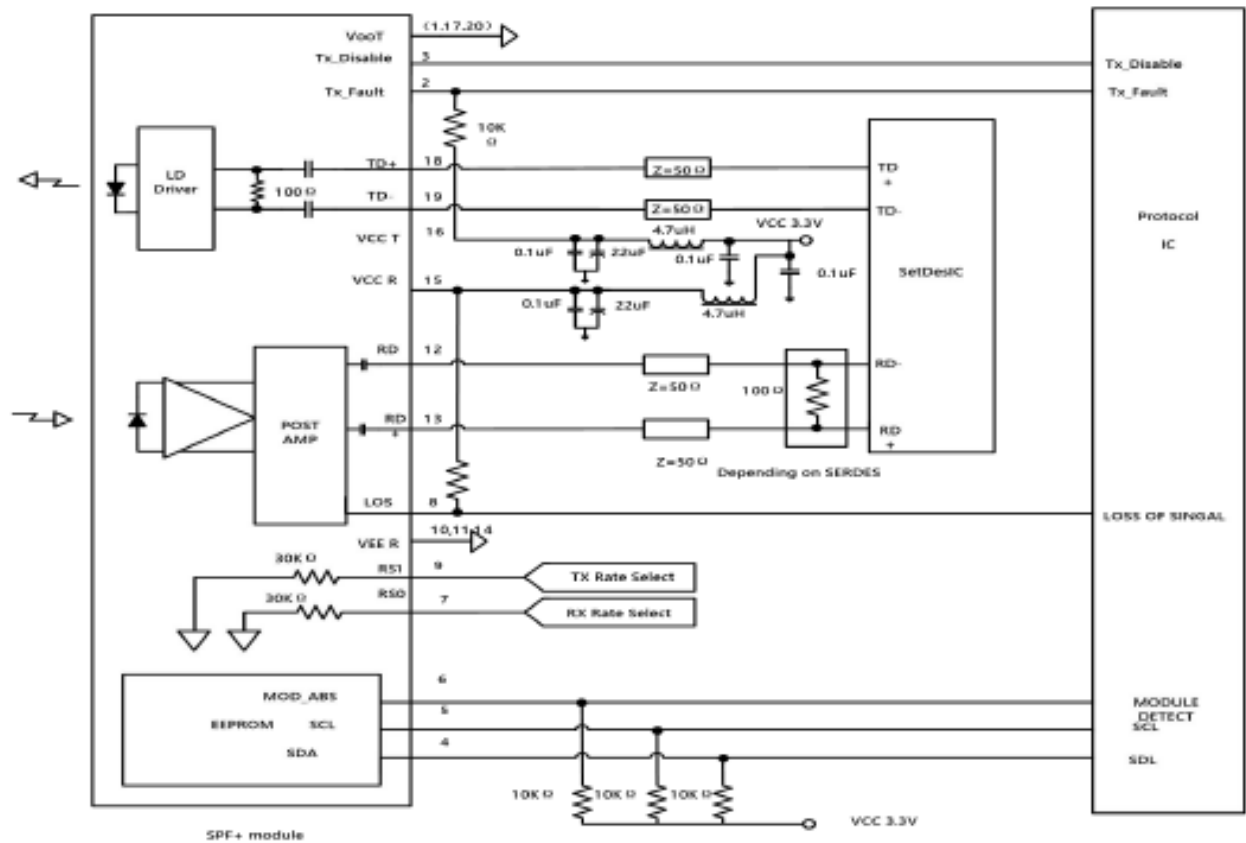
indicates normal operation in the low state. The output will be pulled to <0.8V.

5. VeeR and VeeT may be internally connected within the SFP module.
6. RD-/+. These are the differential receiver outputs. They are AC-coupled, 100 differential lines which should be terminated with 100 (differential) at the user SERDES. The AC coupling is done inside the module and is thus not required on the host board. The voltage swing on these lines will be between 400mV and 2000mV differential (200mV and 1000mV single-ended) when properly terminated.
7. VccR and VccT are the receiver and transmitter power supplies. They are defined as $3.3V \pm 5\%$ at the SFP connector pin. Maximum supply current is 545mA. Recommended host board power supply filtering is shown below. Inductors with DC resistance of less than 1Ω should be used in order to maintain the required voltage at the SFP input pin with 3.3V supply voltage. When the recommended supply-filtering network is used, hot-plugging of the SFP transceiver module will result in an in-rush current of no more than 30mA greater than the steady state value. VccR and VccT may be internally connected within the SFP transceiver module.
8. TD-/+. These are the differential transmitter inputs. They are AC-coupled, differential lines with 100 differential termination inside the module.

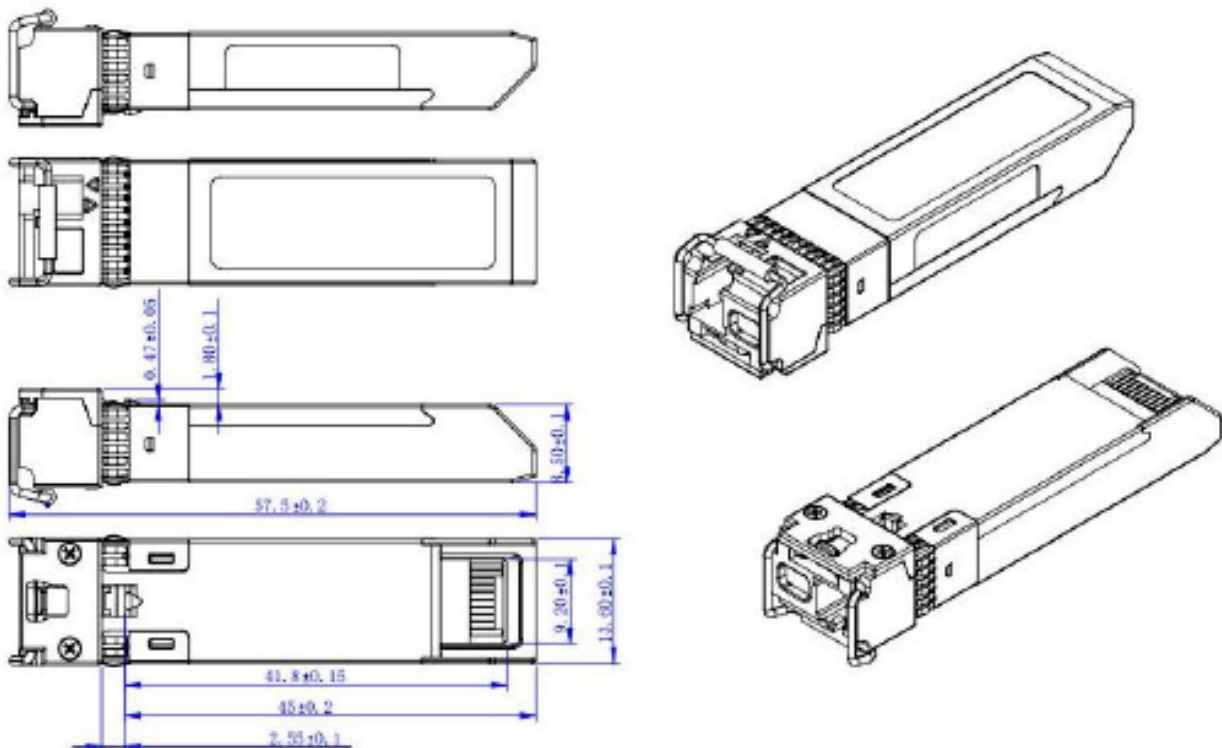
Host Board Connector



Recommended Circuit Schematic



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.



U.S. Headquarters

Email: sales@addonnetworks.com

Telephone: +1 877.292.1701

Fax: 949.266.9273

Europe Headquarters

Email: salesupportemea@addonnetworks.com

Telephone: +44 1285 842070