

## **AFBR-707SDZ-OPC**

Avago® AFBR-707SDZ Compatible TAA Compliant 10GBase-LRM SFP+ Transceiver (MMF, 1310nm, 220m, LC, DOM)

### **Features**

- SFF-8432 and SFF-8472 Compliance
- Duplex LC Connector
- Uncooled DFB transmitter and PIN receiver
- Single-mode Fiber
- Commercial Temperature 0 to 70 Celsius
- Hot Pluggable
- Metal with Lower EMI
- Excellent ESD Protection
- RoHS Compliant and Lead Free



### **Applications:**

- 10GBase-LR Ethernet
- 8x/10x Fibre Channel
- Access, Datacenter and Enterprise
- Mobile Fronthaul CPRI/OBSAI

### **Product Description**

This Avago® AFBR-707SDZ compatible SFP+ transceiver provides 10GBase-LRM throughput up to 220m over multi-mode fiber (MMF) using a wavelength of 1310nm via an LC connector. It is guaranteed to be 100% compatible with the equivalent Avago® 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.

## Absolute Maximum Ratings

| Parameter                  | Symbol           | Min. | Max. | Unit |
|----------------------------|------------------|------|------|------|
| Maximum Supply Voltage     | V <sub>CC</sub>  | -0.5 | 4.0  | V    |
| Storage Temperature        | T <sub>S</sub>   | -40  | 85   | °C   |
| Operating Case Temperature | T <sub>C</sub>   | 0    | 70   | °C   |
| Operating Humidity         | RH               | 5    | 85   | %    |
| Receiver Power             | R <sub>MAX</sub> |      | 0.5  | dBm  |
| Maximum Bitrate            | B <sub>max</sub> |      | 11.3 | Gbps |

## Electrical Characteristics (TOP=25°C, V<sub>CC</sub>=3.3Volts)

| Parameter                      | Symbol               | Min. | Typ. | Max. | Unit | Notes |
|--------------------------------|----------------------|------|------|------|------|-------|
| Power Supply Voltage           | V <sub>CC</sub>      | 3.15 | 3.30 | 3.43 | V    |       |
| Power Supply Current           | I <sub>CC</sub>      |      |      | 303  | mA   |       |
| Power Consumption              | P <sub>DISS</sub>    |      |      | 1    | W    |       |
| Transmitter                    |                      |      |      |      |      |       |
| Differential data input swing  | V <sub>in,pp</sub>   | 120  |      | 850  | mV   |       |
| Input differential impedance   | Z <sub>in</sub>      | 80   | 100  | 120  | Ω    |       |
| Receiver                       |                      |      |      |      |      |       |
| Differential data output swing | V <sub>out, pp</sub> | 300  |      | 850  | mV   |       |
| Output differential impedance  | Z <sub>in</sub>      | 80   | 100  | 120  | Ω    |       |

## Optical Characteristics

| Parameter                          | Symbol           | Min. | Typ. | Max.  | Unit | Notes |
|------------------------------------|------------------|------|------|-------|------|-------|
| Transmitter                        |                  |      |      |       |      |       |
| Optical Power (average)            | P <sub>AVE</sub> | -8.2 |      | 0.5   | dBm  | 1     |
| Optical Modulation amplitude (OMA) | P <sub>OMA</sub> | -5.2 |      |       | dBm  |       |
| Optical Extinction Ratio           | ER               | 3.5  |      |       | dB   |       |
| Optical Wavelength                 | Tλ               | 1260 | 1310 | 1355  | nm   |       |
| Insertion loss                     | IL               |      | 0.6  |       |      |       |
| Receiver                           |                  |      |      |       |      |       |
| Receiver Sensitivity (average)     | R <sub>AVE</sub> |      |      | -14.4 | dBm  | 3     |
| Receiver Sensitivity (OMA)         | R <sub>OMA</sub> |      |      | -12.6 |      | 2     |
| Receiver overload                  | P <sub>max</sub> | 0.5  |      |       | dBm  | 4     |
| Receiver wavelength                | Rλ               | 1260 |      | 1565  | nm   |       |

**Notes:**

1. Coupled into a Single-mode fibre
2. Per IEEE 802.3ae specification
3. Average power, back-to-back, @10.31Gbps, BER  $1E^{-12}$ , PRBS  $2^{31}-1$ .
4. Exceeding the Receiver overload can physically damage the module. Please use appropriate attenuation.

**Pin Descriptions**

| Pin | Symbol     | Name/Descriptions                                                              | Ref. |
|-----|------------|--------------------------------------------------------------------------------|------|
| 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. LVTT-I.            | 3    |
| 4   | SDA        | 2-Wire Serial Interface Data Line (Same as MOD-DEF2 in INF-8074i). LVTTTL-I/O. |      |
| 5   | SCL        | 2-Wire Serial Interface Data Line (Same as MOD-DEF2 in INF-8074i). LVTTTL-I.   |      |
| 6   | MOD_ABS    | Module Absent, Connect to VeeT or VeeR in 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 to 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 +0.5.V.
3. Tx\_Disable is an input contact with a 4.7KΩ to 10KΩ pull-up resistor to VccT inside module.
4. Mod\_ABS is connected to VeeT or VeeR in the SFP+ module. The host may pull the contract up to

Vcc\_Host with a resistor in the range from 4.7KΩ to 10KΩ. Mod\_ABS is asserted “High” when the SFP+ module is physically absent from a host slot.

- Internally pulled down per SFF-8431



Pin-out of connector Block on Host board

### Recommended Circuit Schematic



**Mechanical Specifications**

Small Form Factor Pluggable (SFP) transceivers are compatible with the dimensions defined by the SFP Multi-Sourcing Agreement (MSA).



**EEPROM Information**

EEPROM memory map specific data field description is as below:

