**3HE11245AB-AO**

Alcatel-Lucent Nokia® 3HE11245AB Compatible TAA 1000Base-BX SFP Transceiver (SMF, 1570nmTx/1490nmRx, 80km, LC, DOM)

**Features:**

- SFF-8472 and MSA Compliant
- Single-mode fiber
- Duplex LC Connector
- Commercial Temperature 0 to 70 Celsius
- Support Hot Pluggable
- Single 3.3V power supply
- RoHS compliant and Lead-Free
- Metal with lower EMI



**Applications:**

- 1000Base-BX Ethernet
- Access and Enterprise

**Product Description**

This Alcatel-Lucent Nokia® 3HE11245AB compatible SFP transceiver provides 1000Base-BX throughput up to 80km over single-mode fiber (SMF) using a wavelength of 1570nmTx/1490nmRx 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 Alcatel-Lucent Nokia® 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."

TAA COMPLIANT

## Absolute Maximum Ratings

| Parameter | | Symbol | Min. | Typ. | Max. | Unit | Notes |
|---|---|---|---|---|---|---|---|
| **Maximum Supply Voltage** | | Vcc | -0.5 | | 3.6 | V | |
| **Storage Temperature** | | Tstg | -40 | | 85 | °C | |
| **Operating Case Temperature** | | Tc | 0 | | 70 | °C | |
| **Operating Relative Humidity** | | RH | 5 | | 85 | % | |
| **9μm Core Diameter SMF** | | L | | 80 | | km | |
| **Data Rate** | **GBE** | | | 1.25 | | Gbps | |
| | **FC** | | | 1.063 | | | |

## Electrical Characteristics

| Parameter | | Symbol | Min. | Typ. | Max. | Unit | Notes |
|---|---|---|---|---|---|---|---|
| **Supply Voltage** | | Vcc | 3.15 | 3.3 | 3.47 | V | |
| **Power Supply Current** | | Icc | | | 300 | mA | |
| **Transmitter** | | | | | | | |
| **Differential LVPECL Inputs** | | VIN | 400 | | 1800 | mVp-p | 1 |
| **Differential Input Impedance** | | ZIN | 90 | 100 | 110 | Ω | 2 |
| **Tx_Disable** | **Disable** | | 2 | | Vcc+0.3 | V | |
| | **Enable** | | 0 | | 0.8 | V | |
| **Tx_Fault** | **Fault** | | 2 | | Vcc+0.3 | V | |
| | **Normal** | | 0 | | 0.8 | V | |
| **Receiver** | | | | | | | |
| **Differential LVPECL Outputs** | | VOUT | 400 | | 2000 | mVp-p | 3 |
| **Differential Output Impedance** | | ZOUT | 90 | 100 | 110 | Ω | |
| **Tx_Disable Assert Time** | | T_off | | | 10 | us | |
| **Rx_LOS** | **LOS** | | 2 | | Vcc+0.3 | V | |
| | **Normal** | | 0 | | 0.8 | V | |
| **MOD_DEF(0.2)** | | VOH | 2.5 | | Vcc+0.3 | V | 4 |
| | | VOL | 0 | | 0.5 | V | |

**Notes:**

1. AC coupled inputs. LVPECL logic. Internally AC coupled.
2. Rin>100kΩ @DC.
3. AC coupled outputs. LVPECL logic. Internally AC coupled.
4. With Serial ID.

**Optical Characteristics**

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Notes |
|---|---|---|---|---|---|---|
| **Data Rate** | | | 1.063/1.25 | | Gbps | |
| **Transmitter** | | | | | | |
| **Center Wavelength** | λC | 1550 | 1570 | 1590 | nm | |
| **Spectral Width (-20dB)** | Δλ | | | 1 | nm | |
| **Average Output Power** | POUT | 0 | | 5 | dBm | 1 |
| **Side-Mode Suppression Ratio** | SMSR | 30 | | | dB | |
| **Extinction Ratio** | ER | 9 | | | dB | |
| **Rise/Fall Time (20-80%)** | Tr/Tf | | | 0.26 | ns | |
| **POUT @Tx_Disable Asserted** | POUT | | | -35 | dBm | |
| **Output Optical Eye** | Compliant with IEEE 802.3 | | | | | 2 |
| **Receiver** | | | | | | |
| **Center Wavelength** | λC | 1470 | 1490 | 1510 | nm | |
| **Receiver Sensitivity** | Pmin | | | -24 | dBm | 3 |
| **Receiver Overload** | Pmax | -3 | | | dBm | |
| **LOS De-Assert** | LOSD | | | -25 | dBm | |
| **LOS Assert** | LOSA | -35 | | | dBm | |
| **LOS Hysteresis** | | 0.5 | | | dB | 3 |

**Notes:**

1. Output power is power coupled into a 9/125μm single-mode fiber.
2. Filtered, measured with a PRBS $2^7$-1 test pattern @1.25Gbps.
3. Minimum average optical power is measured at BER less than $1E^{-12}$, with 1.25Gbps, $2^7$-1 PRBS and ER=9dB.

**Pin Descriptions**

| Pin | Symbol | Name/Description | Plug Sequence | 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 | Module Definition 2. 2-Wire Serial ID Interface. | 3 | 3 |
| **5** | MOD-DEF1 | Module Definition 1. 2-Wire Serial ID Interface. | 3 | 3 |
| **6** | MOD-DEF0 | Module Definition 0. Grounded within the module. | 3 | 3 |
| **7** | Rate Select | Not Connected. Function not available. | 3 | |
| **8** | LOS | Loss of Signal. | 3 | 4 |
| **9** | VeeR | Receiver Ground. | 1 | 5 |
| **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 | 7 |
| **14** | VeeR | Receiver Ground. | 1 | 5 |
| **15** | VccR | 3.3 ± 5% Receiver Power. | 2 | 7 |
| **16** | VccT | 3.3 ± 5% Transmitter Power. | 2 | 7 |
| **17** | VeeT | Transmitter Ground. | 1 | 5 |
| **18** | TD+ | Transmitter Data In. | 3 | 8 |
| **19** | TD- | Inverse Transmitter Data In. | 3 | 8 |
| **20** | VeeT | Transmitter Ground. | 1 | 5 |

**Notes:**

1. Tx_Fault is an open collector/drain output, which should be pulled up with a 4.7kΩ to 10kΩ 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 4.7kΩ to 10kΩ resistor. Its states are:

   Low (0V – 0.8V): Transmitter On.

   (>0.8V and <2.0V): Undefined.

   High (2.0V – 3.465V): Transmitter Disabled.

   Open: Transmitter Disabled.
3. MOD-DEF0, 1, 2. These are the module definition pins. They should be pulled up with a 4.7kΩ to 10kΩ resistor on the host board. The pull-up voltage shall be VccT or VccR.

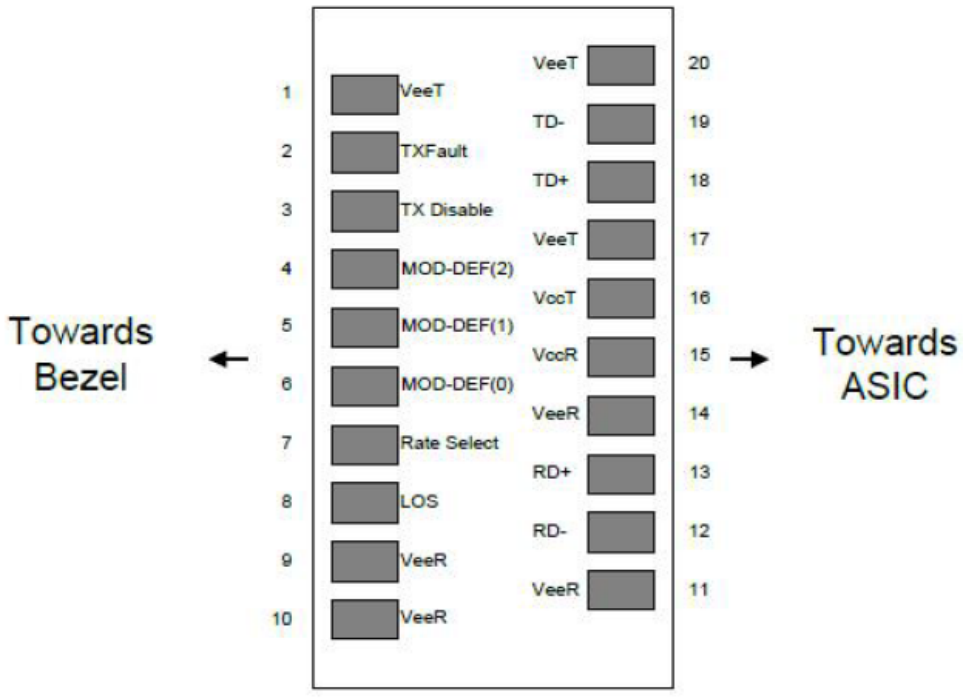
   MOD-DEF0 is grounded by the module to indicate that the module is present.

   MOD-DEF1 is the clock line of 2-wire serial interface for optional serial ID.

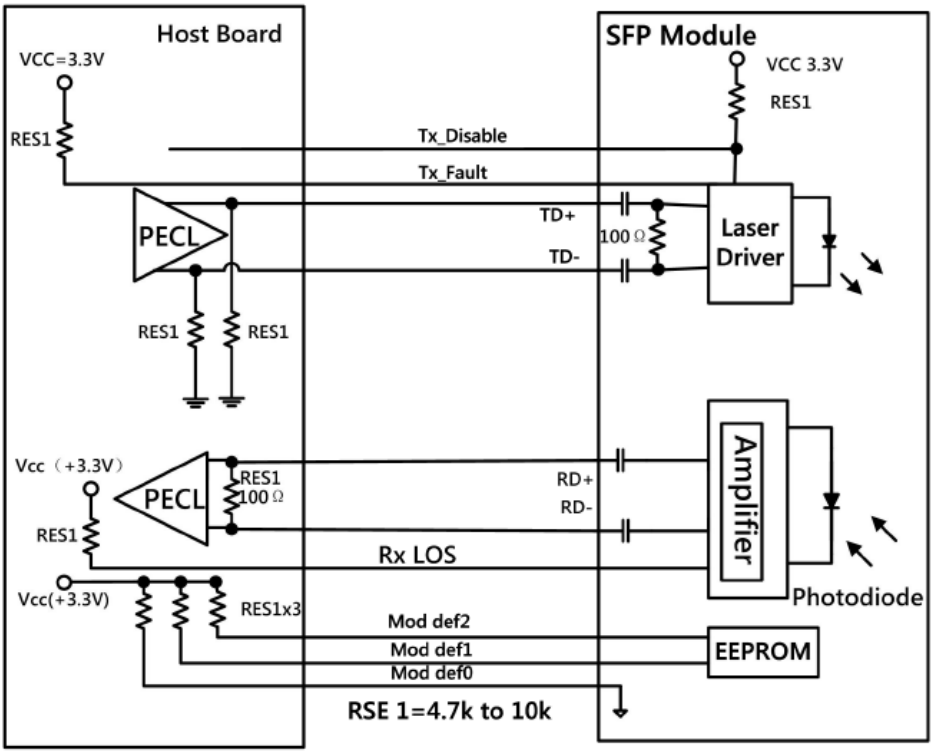
MOD-DEF2 is the data line of 2-wire serial interface for optional serial ID.

4. LOS (Loss of Signal) is an open collector/drain output, which should be pulled up with a 4.7kΩ to 10kΩ 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 100Ω differential lines which should be terminated with 100Ω (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 –1000mV single-ended) when properly terminated.
7. VccR and VccT are the receiver and transmitter power supplies. They are defined as 3.3V±5% at the SFP connector pin. Maximum supply current is 300mA. 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 terminations inside the module. The AC coupling is done inside the module and is thus not required on the host board. The inputs will accept differential swings of 400mV-2000mV (200mV-1000mV single-ended).

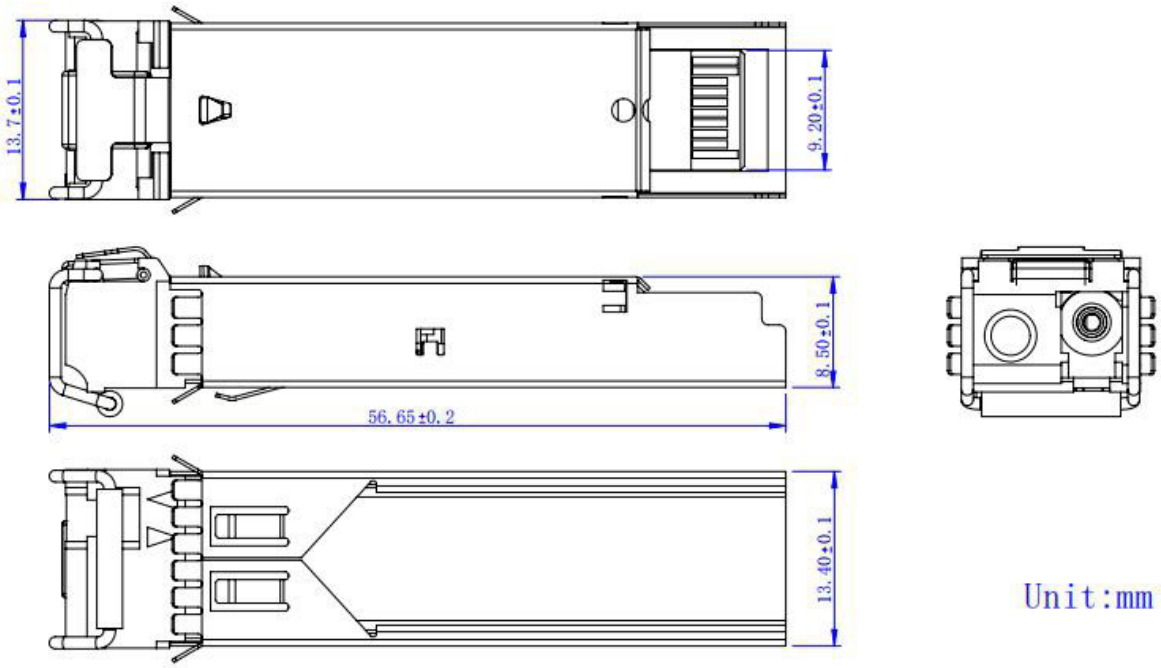
**Pin-Out Connectors**



**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 ranging from NEBS Level 3 to ISO 9001:2015 with every new development while maintaining the signature reliability of its products.




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