

### **SFP-10/25GB-BXU23-20-N-AO**

Alcatel-Lucent Nokia® Compatible TAA 10/25GBase-BX SFP28 Transceiver (SMF, 1270nmTx/1330nmRx, 20km, LC, DOM)

#### **Features**

- SFF-8402 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**

- 25GBase Ethernet
- Access and Enterprise

#### **Product Description**

This Alcatel-Lucent Nokia® SFP28 transceiver provides 10/25GBase-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 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."



## Absolute Maximum Ratings

| Parameter                  | Symbol           | Min. | Typ.  | Max. | Unit | Notes |
|----------------------------|------------------|------|-------|------|------|-------|
| Maximum Supply Voltage     | V <sub>CC</sub>  | -0.3 |       | 4.0  | V    |       |
| Storage Temperature        | T <sub>stg</sub> | -40  |       | 85   | °C   |       |
| Operating Case Temperature | T <sub>c</sub>   | 0    | 25    | 70   | °C   |       |
| Relative Humidity          | RH               | 5    |       | 95   | %    |       |
| Data Rate                  | DR               |      | 24.33 |      | Gbps |       |
|                            |                  |      | 25.78 |      | Gbps |       |

## Electrical Characteristics

| Parameter                      |                      | Symbol              | Min.  | Typ. | Max.     | Unit  | Notes |
|--------------------------------|----------------------|---------------------|-------|------|----------|-------|-------|
| Power Supply Voltage           |                      | V <sub>CC</sub>     | 3.135 | 3.3  | 3.465    | V     |       |
| Power Supply Current           |                      | I <sub>CC</sub>     |       |      | 450      | mA    |       |
| Power Dissipation              |                      | P <sub>DISS</sub>   |       |      | 1500     | mW    |       |
| Transmitter                    |                      |                     |       |      |          |       |       |
| Input Differential Impedance   |                      | Z <sub>IN</sub>     |       | 100  |          | Ω     |       |
| Differential Data Input Swing  |                      | V <sub>IN,pp</sub>  | 180   |      | 700      | mVp-p |       |
| Tx_Fault                       | Transmitter Fault    | VOH                 | 2.0   |      | Host_Vcc | V     |       |
|                                | Normal Operation     | VOL                 | 0     |      | 0.8      | V     |       |
| Tx_Disable                     | Transmitter Disable  | VIH                 | 2.0   |      | Host_Vcc | V     |       |
|                                | Transmitter Enable   | VIL                 | 0     |      | 0.8      | V     |       |
| Receiver                       |                      |                     |       |      |          |       |       |
| Output Differential Impedance  |                      | Z <sub>OUT</sub>    |       | 100  |          | Ω     |       |
| Differential Data Output Swing |                      | V <sub>OUT,pp</sub> | 300   |      | 850      | mVp-p | 1     |
| Data Output Rise/Fall Time     |                      | Tr/Tf               |       |      | 15       | ps    | 2     |
| Rx_LOS                         | Loss of Signal (LOS) | VOH                 | 2.0   |      | Host_Vcc | V     | 3     |
|                                | Normal Operation     | VOL                 | 0     |      | 0.8      | V     | 3     |

### Notes:

1. Internally AC coupled but requires an external 100Ω differential load termination.
2. 20-80%.
3. LOS is an open collector output and should be pulled up with 4.7kΩ on the host board.

## Optical Characteristics

| Parameter                         | Symbol          | Min. | Typ. | Max. | Unit | Notes |
|-----------------------------------|-----------------|------|------|------|------|-------|
| Transmitter                       |                 |      |      |      |      |       |
| Launch Optical Power              | Po              | 0    |      | 5    | dBm  | 1     |
| Center Wavelength Range           | $\lambda_C$     | 1260 | 1270 | 1280 | nm   |       |
| Extinction Ratio                  | ER              | 3.5  |      |      | dB   | 2     |
| Spectral Width (-20dB)            | $\Delta\lambda$ |      |      | 1    | nm   |       |
| Side-Mode Suppression Ratio       | SMSR            | 30   |      |      | dB   |       |
| Optical Rise/Fall Time @25.78Gbps | Tr/Tf           | 15   |      |      | ps   | 3     |
| Optical Return Loss Tolerance     | ORLT            |      |      | 12   | dB   |       |
| POUT @Tx_Disable Asserted         | Poff            |      |      | -30  | dBm  | 1     |
| Receiver                          |                 |      |      |      |      |       |
| Center Wavelength                 | $\lambda_C$     | 1320 | 1330 | 1340 | nm   |       |
| Receiver OMA Sensitivity          | RxSENS1         |      |      | -18  | dBm  | 4     |
| Receiver OMA Sensitivity          | RxSENS2         |      |      | -14  | dBm  | 5     |
| Receiver Overload (Pavg)          | POL             | -3   |      |      | dBm  |       |
| Optical Return Loss               | ORL             | 26   |      |      | dB   |       |
| LOS De-Assert                     | LOSD            |      |      | -19  | dBm  |       |
| LOS Assert                        | LOSA            | -35  |      |      | dBm  |       |
| LOS Hysteresis                    |                 | 0.5  |      |      | dB   |       |

### Notes:

1. Class 1 Laser Safety per FDA/CDRH and EN (IEC) 60825 regulations.
2. 20dB spectral width.
3. Unfiltered, 20-80%.
4. Measured with PRBS  $2^{31}-1$  at  $5 \times 10^{-5}$  BER.
5. Measured with PRBS  $2^{31}-1$  at  $1 \times 10^{-12}$  BER.

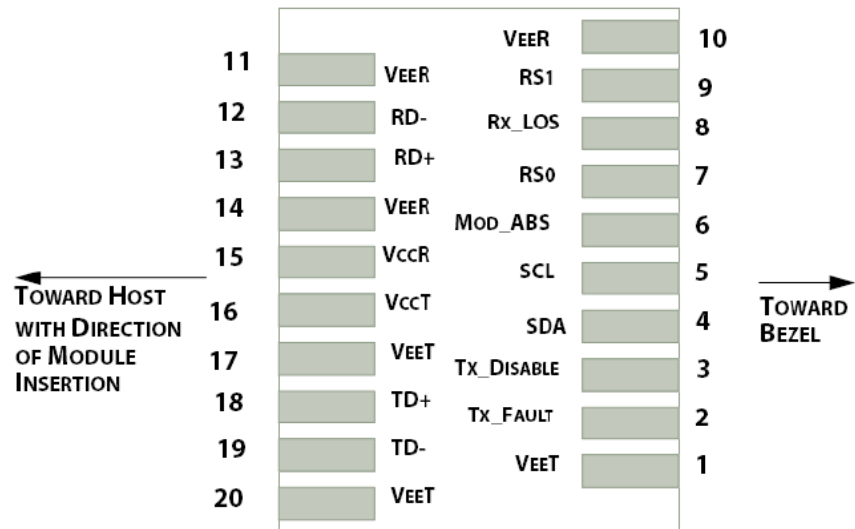
## Pin Descriptions

| Pin | Symbol     | Name/Description                                                          | Notes |
|-----|------------|---------------------------------------------------------------------------|-------|
| 1   | VeeT       | Transmitter Ground.                                                       | 1     |
| 2   | Tx_Fault   | Transmitter Fault. LVTTTL-O. “High” indicates a fault condition.          | 2     |
| 3   | Tx_Disable | Transmitter Disable. LVTTTL-I. “High” or “open” disables the transmitter. | 3     |
| 4   | SDA        | 2-Wire Serial Interface Data. LVCMOS-I/O. MOD-DEF2.                       | 4     |
| 5   | SCL        | 2-Wire Serial Interface Clock. LVCMOS-I/O. MOD-DEF1.                      | 4     |
| 6   | MOD_ABS    | Module Absent (Output). Connected to the VeeT or VeeR in the module.      | 5     |
| 7   | RS0        | N/A.                                                                      | 6     |
| 8   | Rx_LOS     | Receiver Loss of Signal. LVTTTL-O.                                        | 2     |
| 9   | RS1        | N/A.                                                                      | 6     |
| 10  | VeeR       | Receiver Ground.                                                          | 1     |
| 11  | VeeR       | Receiver Ground.                                                          | 1     |
| 12  | RD-        | Receiver Inverted Data Out. CML-O.                                        |       |
| 13  | RD+        | Receiver Data Out. CML-O.                                                 |       |
| 14  | VeeR       | Receiver Ground.                                                          |       |
| 15  | VccR       | +3.3V Receiver Power Supply.                                              |       |
| 16  | VccT       | +3.3V Transmitter Power Supply.                                           |       |
| 17  | VeeT       | Transmitter Ground.                                                       | 1     |
| 18  | TD+        | Transmitter Data In. CML-I.                                               |       |
| 19  | TD-        | Transmitter Inverted Data In. CML-I.                                      |       |
| 20  | VeeT       | Transmitter Ground.                                                       | 1     |

### Notes:

1. The module signal grounds are isolated from the module case.
2. This is an open collector/drain output that, on the host board, requires a 4.7kΩ to 10kΩ pull-up resistor to the Host\_Vcc.
3. This input is internally biased “high” with a 4.7kΩ to 10kΩ pull-up resistor to the VccT.
4. 2-Wire Serial Interface Clock and Data lines require an external pull-up resistor dependent on the capacitance load.
5. This is a ground return that, on the host board, requires a 4.7kΩ to 10kΩ pull-up resistor to the Host\_Vcc.
6. Rate Select can also be set through the 2-wire bus in accordance with SFF-8472 v.12.1m. Rx Rate Select is set at Bit 3, Byte 110, and Address A2h. Tx Rate Select is set at Bit 3, Byte 118, and Address A2h.

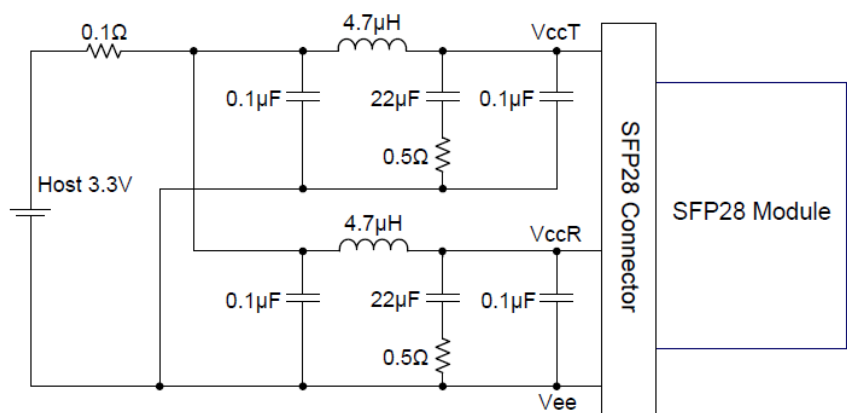
## Pin Assignments



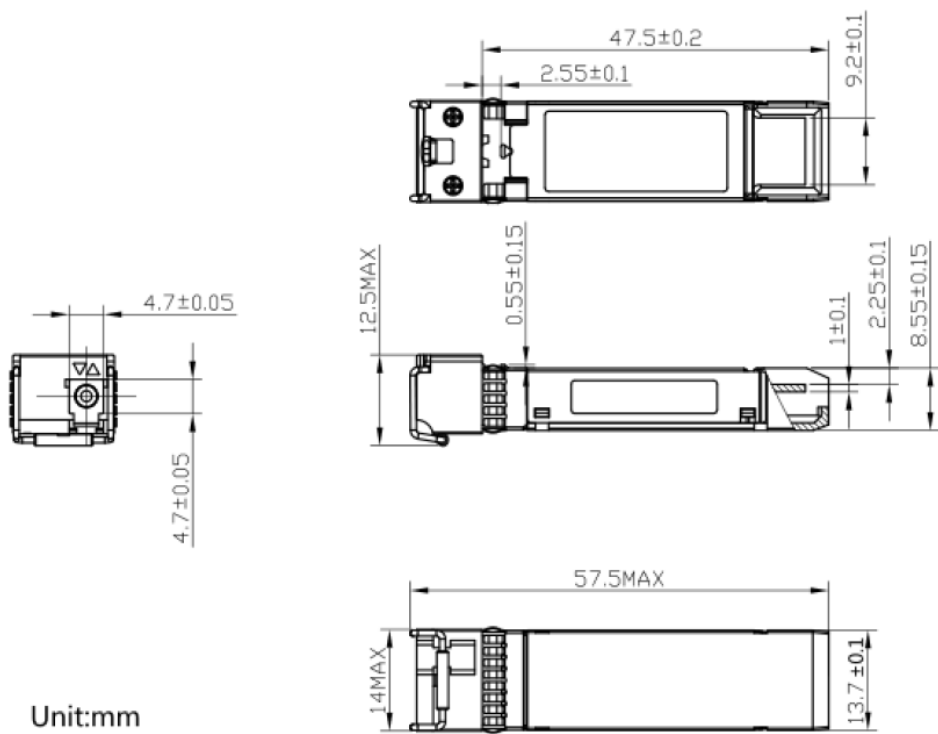
## Block Diagram of Transceiver



Power Supply Filter Network



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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