

## **AL-QSFP-100G-SR4-OPC**

Alcatel-Lucent Nokia® Compatible TAA 100GBase-SR4 QSFP28 Transceiver (MMF, 850nm, 100m, MPO, DOM)

### **Features**

- SFF-8665 Compliance
- MPO Connector
- Multi-mode Fiber
- Commercial Temperature 0 to 70 Celsius
- Hot Pluggable
- Metal with Lower EMI
- Excellent ESD Protection
- RoHS Compliant and Lead Free



### **Applications:**

- 100GBase Ethernet
- Access and Enterprise

### **Product Description**

This Alcatel-Lucent Nokia® compatible QSFP28 transceiver provides 100GBase-SR4 throughput up to 100m over OM4 multi-mode fiber (MMF) using a wavelength of 850nm via an MPO connector. Our transceiver is built to meet or exceed OEM specifications and is guaranteed to be 100% compatible with Alcatel-Lucent Nokia®. 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.

## Absolute Maximum Ratings

| Parameter                  | Symbol          | Min. | Typ.     | Max. | Unit | Notes |
|----------------------------|-----------------|------|----------|------|------|-------|
| Maximum Supply Voltage     | V <sub>CC</sub> | -0.5 |          | 4.0  | V    |       |
| Storage Temperature        | T <sub>S</sub>  | -40  |          | +85  | °C   |       |
| Relative Humidity          | RH              | 5    |          | 95   | %    |       |
| Operating Case Temperature | T <sub>C</sub>  | 0    | 25       | 70   | °C   |       |
| Data Rate PER Channel      | DR              |      | 25.78125 |      | Gb/s |       |

## Electrical Characteristics

| Parameter                      | Symbol                | Min.  | Typ. | Max.  | Unit  | Notes |
|--------------------------------|-----------------------|-------|------|-------|-------|-------|
| Supply Voltage                 | V <sub>CC</sub>       | 3.135 | 3.3  | 3.465 | V     |       |
| Module Supply Current          | I <sub>CC</sub>       |       |      | 750   | mA    |       |
| Power Dissipation              | P <sub>D</sub>        |       |      | 2.5   | W     |       |
| Transmitter                    |                       |       |      |       |       |       |
| Input Differential Impedance   | Z <sub>IN</sub>       |       | 100  |       | Ω     |       |
| Differential Data Input Swing  | V <sub>IN, P-P</sub>  | 180   |      | 900   | mVp-p |       |
| Receiver                       |                       |       |      |       |       |       |
| Output Differential Impedance  | Z <sub>O</sub>        |       | 100  |       | Ω     |       |
| Differential Data Output Swing | V <sub>OUT, P-P</sub> | 300   |      | 850   | mVp-p | 1     |
| Transition Time (20% to 80%)   | T <sub>r, Tf</sub>    | 12    |      |       | ps    |       |

## Notes:

1. The optical power is launched into OM3 MMF.
2. Measured with a PRBS 2<sup>31</sup>-1 test pattern @25.78125Gbps.

## Optical Characteristics

| Parameter                                        | Symbol                      | Min. | Typ. | Max.  | Unit. | Notes |
|--------------------------------------------------|-----------------------------|------|------|-------|-------|-------|
| Transmitter                                      |                             |      |      |       |       |       |
| Launch Optical Power                             | P <sub>o</sub>              | -8.4 |      | +2.4  | dBm   | 1     |
| Center Wavelength Range                          | λ <sub>c</sub>              | 840  | 850  | 860   | nm    | -     |
| Extinction Ratio                                 | EX                          | 2    |      |       | dB    | 2     |
| Spectral width (RMS)                             | Δλ                          |      |      | 0.6   | nm    |       |
| Transmitter and Dispersion Penalty               | TDP                         |      |      | 4.3   | dB    |       |
| Optical Return Loss Tolerance                    | ORLT                        |      |      | 12    | dB    |       |
| Eye Diagram                                      | IEEE Std 802.3bm compatible |      |      |       |       |       |
| Receiver                                         |                             |      |      |       |       |       |
| Center Wavelength                                | λ <sub>c</sub>              | 840  | 850  | 860   | nm    |       |
| Average Receiver Sensitivity (P <sub>avg</sub> ) | S                           |      |      | -11   | dBm   | 3     |
| Average Receiver Sensitivity (P <sub>avg</sub> ) | S                           |      |      | -7.5  | dBm   | 4     |
| Receiver Overload (P <sub>avg</sub> )            | P <sub>OL</sub>             | 2.5  |      |       | dBm   |       |
| Damage Threshold                                 | P <sub>OL</sub>             | 3.4  |      |       | dBm   |       |
| Optical Reflectance                              | ORL                         |      |      | -12   | dB    |       |
| LOS Assert                                       | LOS <sub>A</sub>            | -30  |      |       | dB    |       |
| LOS De-Assert                                    | LOS <sub>D</sub>            |      |      | -11.5 | dB    |       |
| LOS Hysteresis                                   |                             | 0.5  |      |       | dB    |       |

### Notes:

1. The optical power is launched into OM3 MMF.
2. Measured with a PRBS 2<sup>31</sup>-1 test pattern @25.78125Gbps.
3. Measured with a PRBS 2<sup>31</sup>-1 test pattern, 25.78125Gb/s, BER<5E<sup>-5</sup>.
4. Measured with PRBS 2<sup>31</sup>-1 test pattern, 25.78125Gb/s, BER<10<sup>-12</sup>.

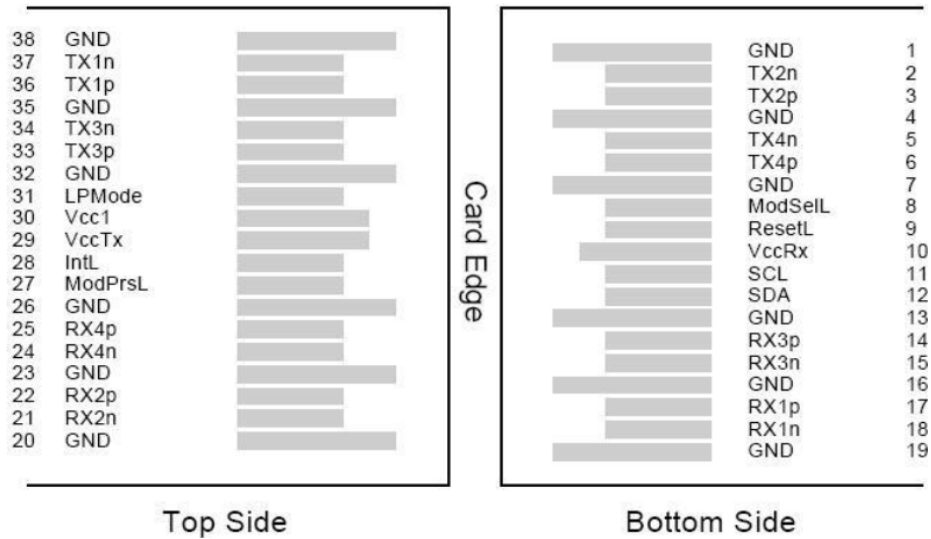
## Pin Descriptions

| Pin | Symbol  | Function/Description                             | Notes |
|-----|---------|--------------------------------------------------|-------|
| 1   | GND     | Transmitter Ground (Common with Receiver Ground) | 1     |
| 2   | Tx2-    | Transmitter Inverted Data Input                  |       |
| 3   | Tx2+    | Transmitter Non-Inverted Data output             |       |
| 4   | GND     | Transmitter Ground (Common with Receiver Ground) | 1     |
| 5   | Tx4-    | Transmitter Inverted Data Input                  |       |
| 6   | Tx4+    | Transmitter Non-Inverted Data output             |       |
| 7   | GND     | Transmitter Ground (Common with Receiver Ground) | 1     |
| 8   | ModSel  | Module Select                                    | 2     |
| 9   | ResetL  | Module Reset                                     | 2     |
| 10  | VccRx   | 3.3V Power Supply Receiver                       |       |
| 11  | SCL     | 2-Wire serial Interface Clock                    | 2     |
| 12  | SDA     | 2-Wire serial Interface Data                     | 2     |
| 13  | GND     | Transmitter Ground (Common with Receiver Ground) | 1     |
| 14  | Rx3+    | Receiver Non-Inverted Data Output                |       |
| 15  | Rx3-    | Receiver Inverted Data Output                    |       |
| 16  | GND     | Transmitter Ground (Common with Receiver Ground) | 1     |
| 17  | Rx1+    | Receiver Non-Inverted Data Output                |       |
| 18  | Rx1-    | Receiver Inverted Data Output                    |       |
| 19  | GND     | Transmitter Ground (Common with Receiver Ground) | 1     |
| 20  | GND     | Transmitter Ground (Common with Receiver Ground) | 1     |
| 21  | Rx2-    | Receiver Inverted Data Output                    |       |
| 22  | Rx2+    | Receiver Non-Inverted Data Output                |       |
| 23  | GND     | Transmitter Ground (Common with Receiver Ground) | 1     |
| 24  | Rx4-    | Receiver Inverted Data Output                    | 1     |
| 25  | Rx4+    | Receiver Non-Inverted Data Output                |       |
| 26  | GND     | Transmitter Ground (Common with Receiver Ground) | 1     |
| 27  | ModPrsl | Module Present                                   |       |
| 28  | IntL    | Interrupt                                        | 2     |
| 29  | VccTx   | 3.3V power supply transmitter                    |       |
| 30  | Vcc1    | 3.3V power supply                                |       |
| 31  | LPMODE  | Low Power Mode                                   | 2     |
| 32  | GND     | Transmitter Ground (Common with Receiver Ground) | 1     |
| 33  | Tx3+    | Transmitter Non-Inverted Data Input              |       |
| 34  | Tx3-    | Transmitter Inverted Data Output                 |       |

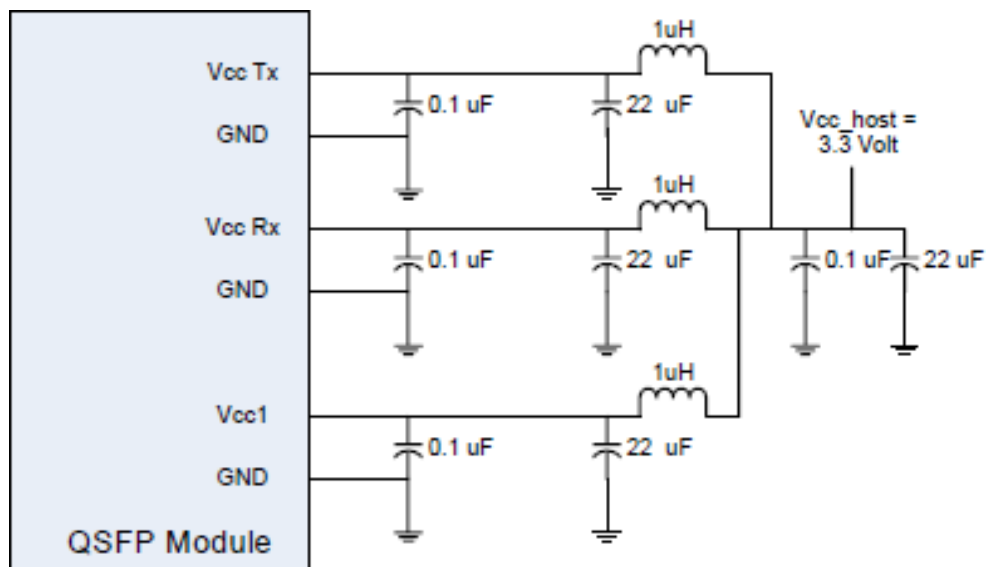
|    |      |                                                  |   |
|----|------|--------------------------------------------------|---|
| 35 | GND  | Transmitter Ground (Common with Receiver Ground) | 1 |
| 36 | Tx1+ | Transmitter Non-Inverted Data Input              |   |
| 37 | Tx1- | Transmitter Inverted Data Output                 |   |
| 38 | GND  | Transmitter Ground (Common with Receiver Ground) | 1 |

**Notes:**

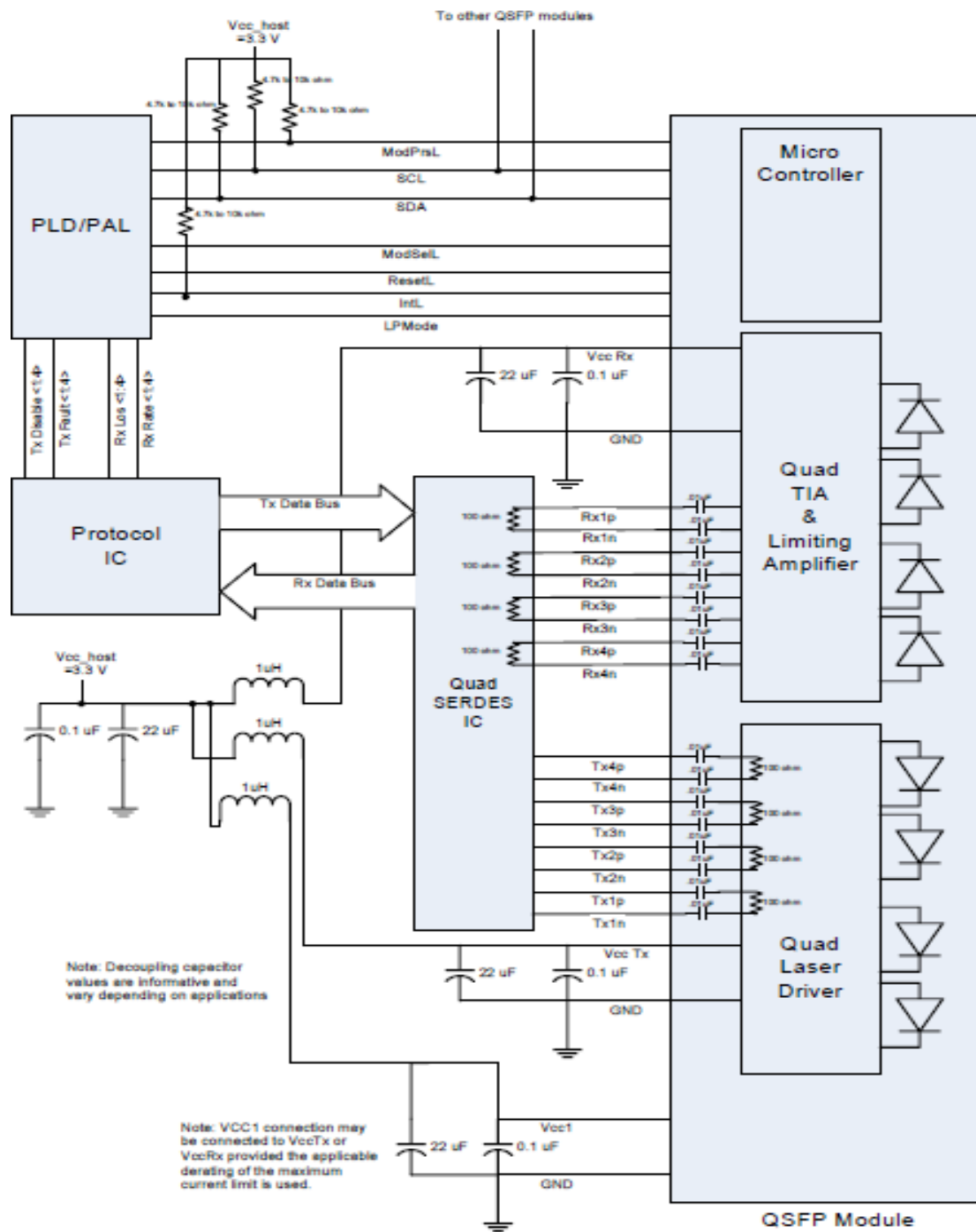
1. The module signal grounds are isolated from the module case.
2. This is an open collector/drain output that on the host board requires a 4.7KΩ to 10KΩ pull-up resistor to VccHost.



**Recommended Host Board Power Supply Filter Network**



## Recommended Application Interface Block Diagram



Mechanical Specifications

