

### **QSFP28-100GB-PSM4-NF-N-OPC**

Alcatel-Lucent Nokia® Compatible TAA 100GBase-PSM4 QSFP28 Transceiver (SMF, 1310nm, 2km, MPO, DOM, No FEC)

#### **Features**

- Compliant to IEEE 802.3bm
- 4 Parallel Lanes Design
- Compliant with MSA 100G PSM4 Specifications
- Up to 25.78125Gbps Per Channel Data Links
- Single 3.3V Power Supply
- 4-Channel PIN Photo Detector
- Up to 2km on SMF with No FEC
- Class 1 Laser Safety Certified
- Commercial Temperature: 0 to 70 Celsius
- RoHS Compliant and Lead-Free



#### **Applications:**

- 100GBase Ethernet

#### **Product Description**

This Alcatel-Lucent Nokia® compatible QSFP28 transceiver provides 100GBase-PSM4 throughput up to 2km over single-mode fiber (SMF) using a wavelength of 1310nm via an MPO connector with no FEC. 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.

## Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Power Supply Voltage	V <sub>CC</sub>	-0.5		4	V	
Storage Temperature	T <sub>stg</sub>	-40		85	°C	
Case Operating Temperature	T <sub>c</sub>	0	25	70	°C	
Relative Humidity	RH	5		95	%	
Data Rate	BR		25.78125		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>			1060	mA	
Power Dissipation	P <sub>DISS</sub>			3500	W	
Transmitter						
Input Differential Impedance	Z <sub>IN</sub>	90	100	110	Ω	
Differential Data Input Swing	V <sub>IN,pp</sub>	190		700	mVp-p	
AC Common-Mode Input Voltage Tolerance		15			mV	
Receiver						
Output Differential Impedance	Z <sub>OUT</sub>	90	100	110	Ω	
Differential Data Output Swing	V <sub>OUT,pp</sub>	300		850	mVp-p	1
AC Common-Mode Output Voltage		12		7.5	ps	
Single-Ended Output Voltage		-0.3		4		

### Notes:

1. Internally AC coupled but requires an external 100Ω differential load termination.

## Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Launch Optical Power Per Lane	Po	-4.5		4	dBm	1
Side-Mode Suppression Ratio	SMSR	30			dB	
Center Wavelength	λ	1295	1310	1325	nm	
Extinction Ratio	ER	3.5			dB	2
Optical Return Loss Tolerance	ORLT			20	dB	
POUT @Tx_Disable Asserted	Poff			-30	dBm	1
Transmitter Eye Mask Definition	{X1, X2, X3, Y1, Y2, Y3} {0.31, 0.4, 0.45, 0.34, 0.38, 0.4}					
Receiver						
Center Wavelength	λC	1295		1325	nm	
Average Receive Power Per Lane	P1	-7.5		2.0	dBm	
Receiver Sensitivity Per Lane	S			-7.5	dBm	3
Receiver Overload Per Channel	POL	2.0			dBm	3
Damage Threshold	Pdamage	3.0			dBm	
LOS De-Assert	LOSD			-12.5	dBm	
LOS Assert	LOSA	-24			dBm	
LOS Hysteresis		0.5			dB	

### Notes:

1. The optical power is launched into the SMF.
2. Measured with a PRBS  $2^{31}-1$  test pattern @25.78125Gbps.
3. Measured with PRBS  $2^{31}-1$  test pattern, @25.78125Gbps per lane, and BER= $1 \times 10^{-12}$ .

## Pin Descriptions

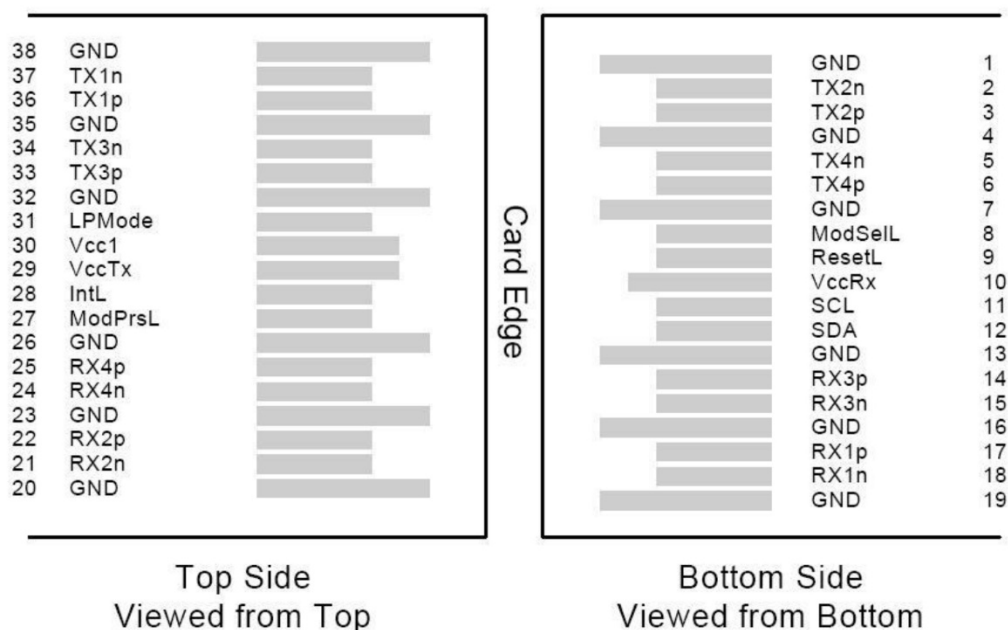
Pin	Symbol	Name/Description	Notes
1	GND	Transmitter Ground (Common with Receiver Ground).	1
2	Tx2-	Transmitter Inverted Data Input.	
3	Tx2+	Transmitter Non-Inverted Data Input.	
4	GND	Transmitter Ground (Common with Receiver Ground).	1
5	Tx4-	Transmitter Inverted Data Input.	
6	Tx4+	Transmitter Non-Inverted Data Input.	
7	GND	Transmitter Ground (Common with Receiver Ground).	1
8	ModSelL	Module Select.	2
9	ResetL	Module Reset.	2
10	VccRx	+3.3V Receiver Power Supply.	
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 Transmitter Power Supply.	
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 Input.	
38	GND	Transmitter Ground (Common with Receiver Ground).	1

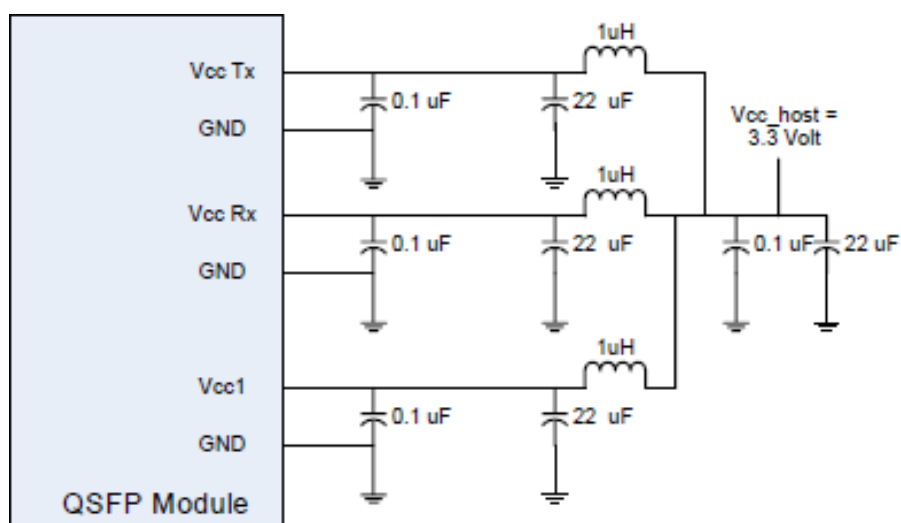
#### Notes:

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

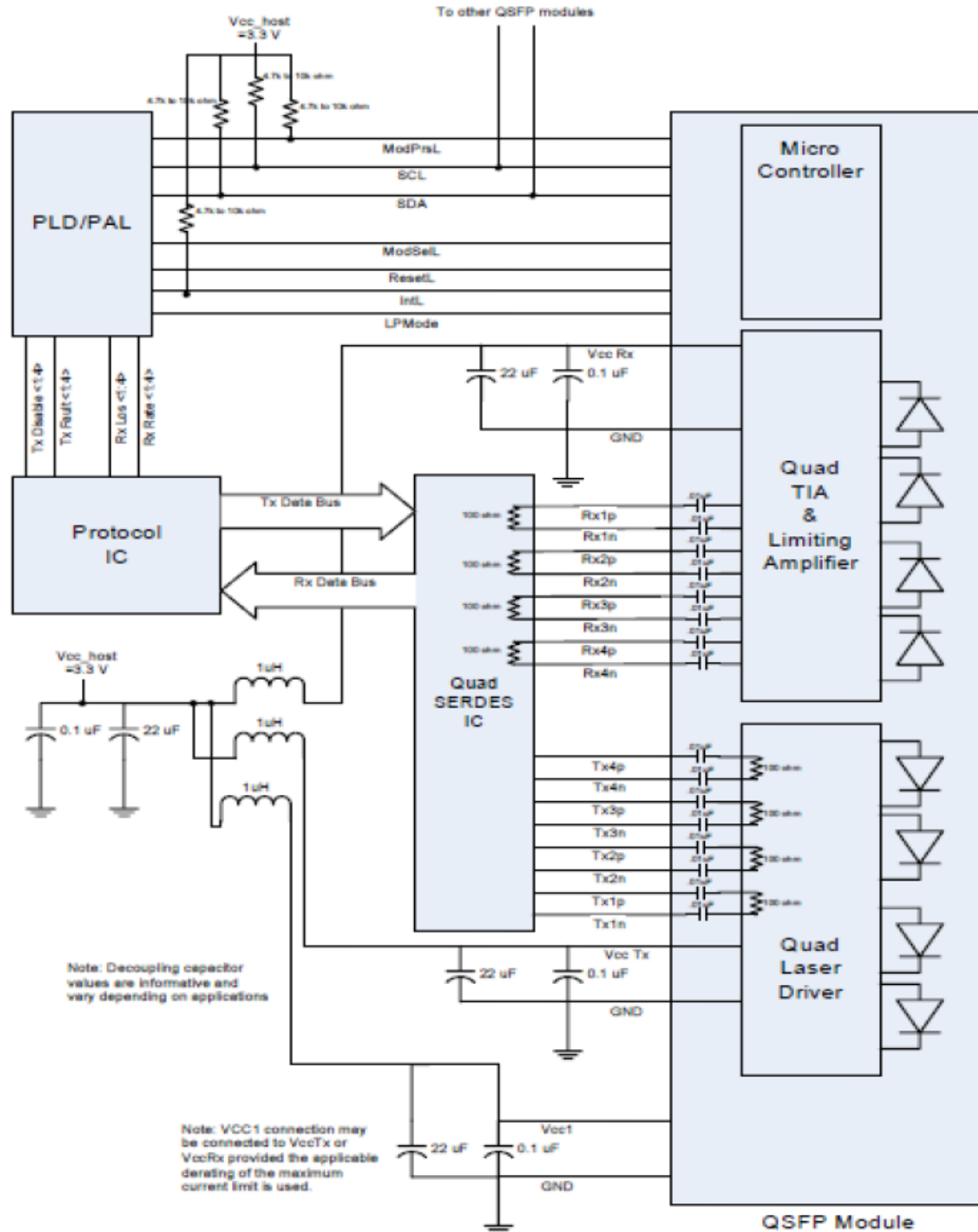
#### Electrical Pin-Out Details



#### Recommended Host Board Power Supply Filter Network



## Transceiver Interface Block Diagram



Mechanical Specifications

