

## SFP-1G-BXD74-N-C

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

### Features:

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



### Applications:

- 1000Base Ethernet

### Product Description

This Alcatel-Lucent Nokia® 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.

ProLabs' 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	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
<b>Data Rate</b>			1.063/1.25		Gbps	
<b>Transmitter</b>						
<b>Center Wavelength</b>	$\lambda_C$	1550	1570	1590	nm	
<b>Spectral Width (-20dB)</b>	$\Delta\lambda$			1	nm	
<b>Average Output Power</b>	POUT	0		5	dBm	1
<b>Side-Mode Suppression Ratio</b>	SMSR	30			dB	
<b>Extinction Ratio</b>	ER	9			dB	
<b>Rise/Fall Time (20-80%)</b>	Tr/Tf			0.26	ns	
<b>POUT @Tx_Disable Asserted</b>	POUT			-35	dBm	
<b>Output Optical Eye</b>	Compliant with IEEE 802.3					2
<b>Receiver</b>						
<b>Center Wavelength</b>	$\lambda_C$	1470	1490	1510	nm	
<b>Receiver Sensitivity</b>	Pmin			-24	dBm	3
<b>Receiver Overload</b>	Pmax	-3			dBm	
<b>LOS De-Assert</b>	LOSD			-25	dBm	
<b>LOS Assert</b>	LOSA	-35			dBm	
<b>LOS Hysteresis</b>		0.5			dB	3

### Notes:

1. Output power is power coupled into a 9/125 $\mu$ m single-mode fiber.
2. Filtered, measured with a PRBS 2<sup>7</sup>-1 test pattern @1.25Gbps.
3. Minimum average optical power is measured at BER less than 1E<sup>-12</sup>, with 1.25Gbps, 2<sup>7</sup>-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

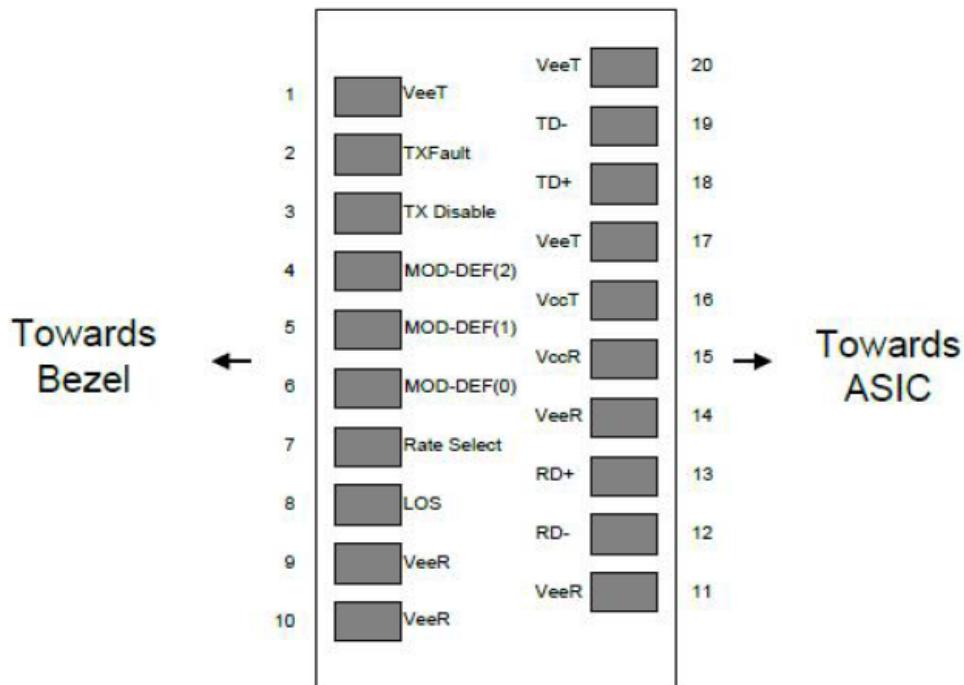
## Notes:

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.

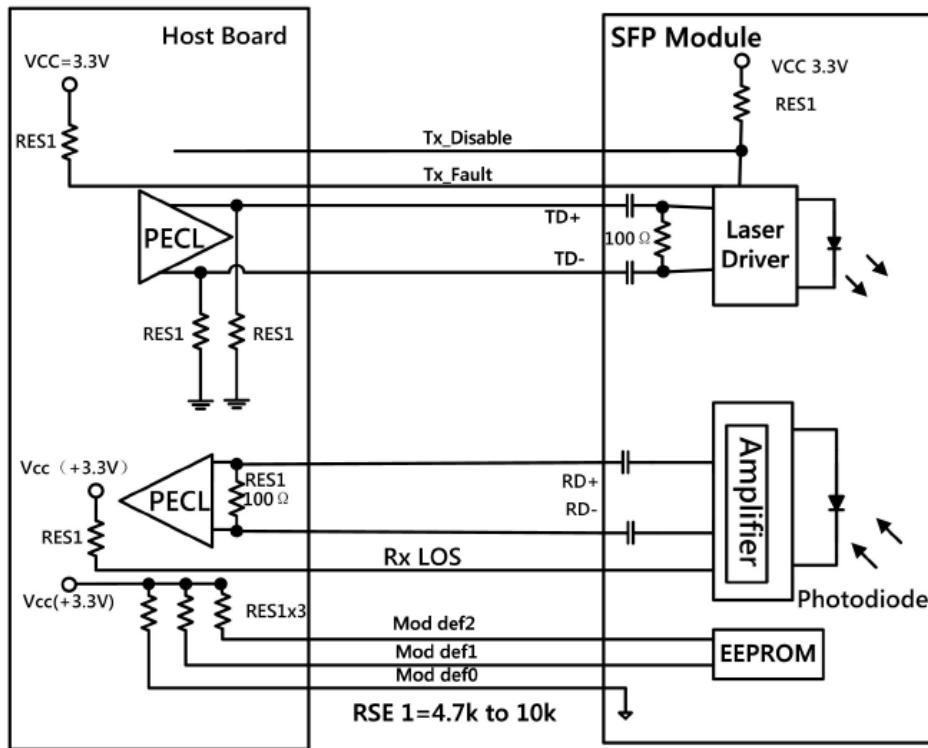
MOD-DEF2 is the data line of 2-wire serial interface for optional serial ID.

4. LOS (Loss of Signal) is an open collector/drain output, which should be pulled up with a  $4.7\text{k}\Omega$  to  $10\text{k}\Omega$  resistor. Pull-up voltage between 2.0V and  $\text{VccT}/R+0.3\text{V}$ . 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  $<0.8\text{V}$ .
5. VeeR and VeeT may be internally connected within the SFP module.
6. RD-/+: these are the differential receiver outputs. They are AC coupled  $100\Omega$  differential lines which should be terminated with  $100\Omega$  (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  $3.3\text{V}\pm5\%$  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  $1\Omega$  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 inrush 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  $100\Omega$  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).

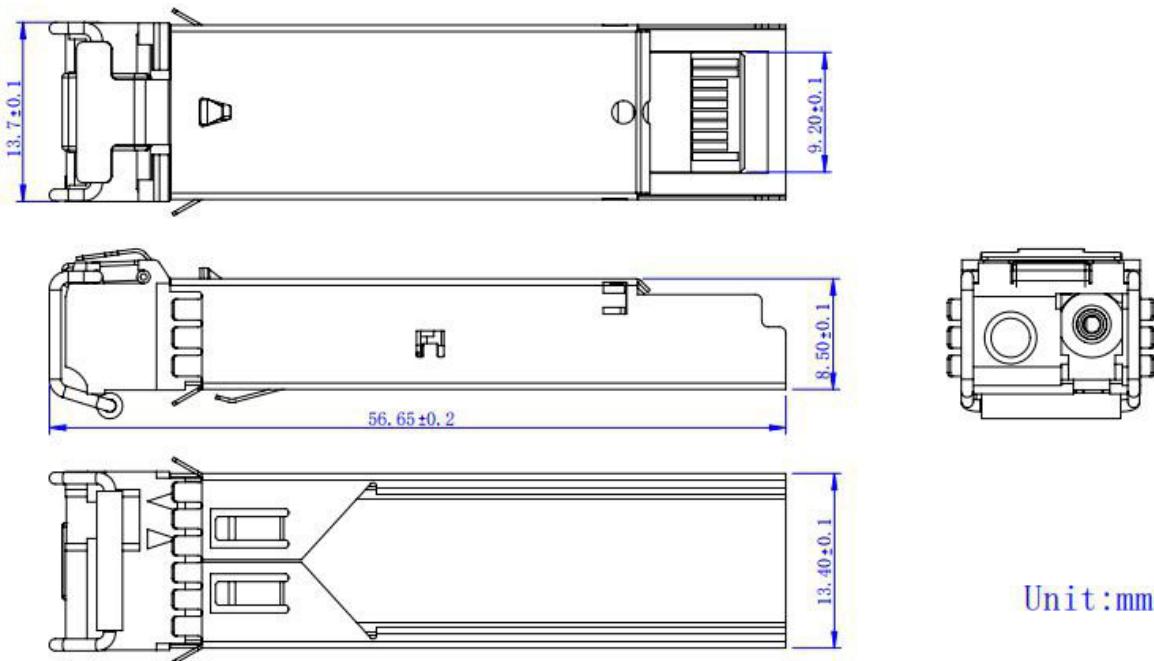
#### Pin-Out Connectors



## Recommended Circuit Schematic



## Mechanical Specifications



## About ProLabs

Our extensive experience comes as standard. For over 20 years ProLabs has delivered optical connectivity solutions that give our customers freedom and choice through our ability to provide seamless interoperability. At the heart of our company is the ability to provide state-of-the-art optical transport and connectivity solutions that are compatible with more than 100 optical switching and transport platforms.

## A Complete Portfolio of Network Solutions

ProLabs is focused on innovations in optical transport and connectivity. The combination of our knowledge of optics and networking equipment enables ProLabs to be your single source for optical transport and connectivity solutions from 100Mb to 1.6T while providing innovative solutions that increase network efficiency. We provide the optical connectivity expertise that is compatible with and enhances your switching and transport equipment.

## The Trusted Partner

Customer service is our number one value. ProLabs has invested in people, labs and manufacturing capacity to ensure compatible products, and immediate answers to your questions. With Engineering and Manufacturing offices in the U.K. and U.S. augmented by field offices throughout the U.S., U.K. and Asia, ProLabs is able to be our customers best advocate 24 hours a day.



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