3HE04823AA-N-I-C

Alcatel-Lucent Nokia® 3HE04823AA-N Compatible TAA 10GBase-LRM SFP+ Transceiver (MMF, 1310nm, 220m, LC, DOM, -40 to 85C)

Features:

- SFF-8432 and SFF-8472 Compliance
- Duplex LC Connector
- Single-mode Fiber
- Industrial Temperature -40 to 85 Celsius
- Hot Pluggable
- Metal with Lower EMI
- Excellent ESD Protection
- RoHS Compliant and Lead Free

Applications:

- 10GBase-LR Ethernet
- 8x/10x Fibre Channel
- Access, Datacenter and Enterprise
- Mobile Fronthaul CPRI/OBSAI

Product Description

This Alcatel-Lucent Nokia® 3HE04823AA-N compatible SFP+ transceiver provides 10GBase-LRM throughput up to 220m over multi-mode fiber (MMF) using a wavelength of 1310nm 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.

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."

TAA COMPLIANT

Rev. 081622

Regulatory Compliance

- ESD to the Electrical PINs: compatible with MIL-STD-883E Method 3015.4
- ESD to the LC Receptacle: compatible with IEC 61000-4-3
- EMI/EMC compatible with FCC Part 15 Subpart B Rules, EN55022:2010
- Laser Eye Safety compatible with FDA 21CFR, EN60950-1& EN (IEC) 60825-1,2
- RoHS compliant with EU RoHS 2.0 directive 2015/863/EU

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Maximum Supply Voltage	Vcc	-0.5	4.0	V
Storage Temperature	TS	-40	85	°C
Operating Case Temperature	Tc	-40	85	°C
Operating Humidity (non-condensing)	RH	0	85	%
Maximum Bitrate	B_{max}		11.3	Gbps

Electrical Characteristics (TOP=25°C, Vcc=3.3Volts)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Power Supply Voltage	Vcc	3.14	3.30	3.46	V	
Power Supply Current	Icc		200	300	mA	
Power Consumption	P_{DISS}			1.0	W	
Transmitter						
Differential data input swing	Vin,pp	90		350	mV	1
Input differential impedance	Rin		100		Ω	2
Transmit Disable Voltage	VD	2		Vcc	V	3
Transmit Enable Voltage	V_{EN}	Vee		Vee+ 0.8	V	
Receiver						
Termination Mismatch at 1 MHz	ΔZ_M			5	%	
Single Ended Output Voltage Tolerance		-0.3		4.0	V	
Output AC Common Mode Voltage				7.5	mV RMS	
Output Rise and Fall time (20% to 80%)	Tr, Tf	30			Ps	4
Relative Noise LRM Links with crosstalk	RN	per SFF-8431				5
Difference Waveform Distortion Penalty	dWDP	per SFF-8431			dBo	5,6
Differential Voltage Modulation Amplitude	VMA	180		600	mV	
LOS Fault	$V_{LOS\ fault}$	2		Vcc_{HOST}	V	7
LOS Normal	$V_{LOS\ norm}$	Vee		Vee+0.8	V	7
Power Supply Noise Tolerance	VccT/VccR	per SFF-8431			mVpp	8

Notes:

1. Per SFF-8431 Rev 4.1
2. Connected directly to TX data input pins. AC coupling from pins into laser driver IC
3. Into 100 ohms differential termination.
4. Measured with Module Compliance Test Board and OMA test pattern.
5. Values shown in Table 20, SFF-8431. dWDP and RN is calculated by the following equation:
6. RN ≤ min[(m1 × dWDP + b1), (m2 ×dWDP + b2), RNmax]
7. Defined with reference receiver with 14 T/2 spaced FFE taps and 5 T spaced DFE taps.
8. LOS is an open collector output. Should be pulled up with 4.7k – 10kΩ on the host board. Normal operation is logic 0; loss of signal is logic 1. Maximum pull-up voltage is 5.5V.
9. As described in Section 2.8.1, SFF-8431 Rev 4.1.

Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Optical Power (average)	P_{AVE}	-6.5		0.5	dBm	1
Optical Modulation Amplitude (OMA)	P_{OMA}	-4.5		+1.5	dBm	
Optical Extinction Ratio	ER	3.5			dB	
Wavelength Range	λ_C	1260		1355	nm	
Optical Eye Mask Margin		0			%	2
Transmitter Waveform Dispersion Penalty	TWDP			4.7	dB	3
Average Launch power of OFF transmitter	P_{OFF}			-30	dBm	
Uncorrelated Jitter [rms]	Tx_j			0.033	UI	
Relative Intensity Noise	$RIN_{12}OMA$			-128	dB/Hz	
Encircled Flux	<5μm	30			%	
	<11μm	81				
Transmitter Reflectance				-12	dB	
Optical Return Loss Tolerance		20			dB	
Receiver						
Wavelength Range	λ_C	1260		1355	Nm	
Comprehensive Stressed Receiver Sensitivity (OMA) @ 10.3125Gb/s	Precursor			-6.5	dBm	5
	Symmetrical			-6.0		
	Postcursor			-6.5		
Receiver overload	P_{max}	+1.5			dBm	4
Receiver Reflectance	R_{rx}			-12	dB	
LOS De-Assert	LOS_D			-11	dBm	
LOS Assert	LOS_A	-30			dBm	
LOS Hysteresis		0.5			dB	

Notes:

1. Average power figures are informative only, per IEEE802.3aq
2. Optical Eye Mask requires the host board to be SFF-8431 compliant. Optical eye mask per IEEE802.3aq.
3. TWDP figure requires the host board to be SFF-8431compliant. TWDP is calculated using the Matlab code provided in clause 68.6.6.2 of IEEE802.3aq
4. Receiver overload specified in OMA and under the worst comprehensive stressed condition.
5. Conditions of stressed receiver tests per IEEE802.3aq. CSRS testing requires the host board to be SFF-8431 compliant.

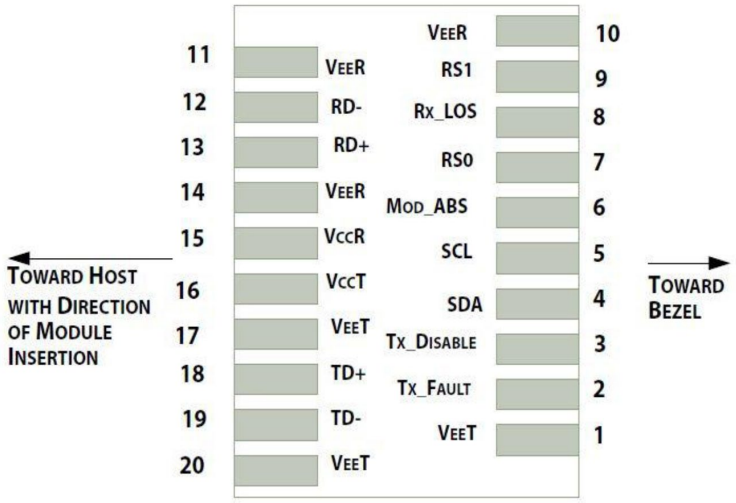
Pin Descriptions

Pin	Symbol	Name/Descriptions	Ref.
1	VeeT	Transmitter Ground (Common with Receiver Ground).	1
2	TX Fault	Transmitter Fault. LVTTL-O	2
3	TX Disable	Transmitter Disable. Laser output disabled on high or open. LVTT-I.	3
4	SDA	2-Wire Serial Interface Data Line (Same as MOD-DEF2 in INF-8074i). LVTTL-I/O.	
5	SCL	2-Wire Serial Interface Data Line (Same as MOD-DEF2 in INF-8074i). LVTTL-I.	
6	MOD_ABS	Module Absent, Connect to VeeT or VeeR in Module.	4
7	RS0	Rate Select 0. Not used	5
8	LOS	Loss of Signal indication. Logic 0 indicates normal operation. LVTTL-O.	2
9	RS1	Rate Select 1. Not used	5
10	VeeR	Receiver Ground (Common with Transmitter Ground).	1
11	VeeR	Receiver Ground (Common with Transmitter Ground).	1
12	RD-	Receiver Inverted DATA out. AC Coupled. CML-O.	
13	RD+	Receiver Non-inverted DATA out. AC Coupled. CML-O.	
14	VeeR	Receiver Ground (Common with Transmitter Ground).	1
15	VccR	Receiver Power Supply.	
16	VccT	Transmitter Power Supply.	
17	VeeT	Transmitter Ground (Common with Receiver Ground).	1
18	TD+	Transmitter Non-Inverted DATA in. AC Coupled. CML-I.	
19	TD-	Transmitter Inverted DATA in. AC Coupled. CML-O.	
20	VeeT	Transmitter Ground (Common with Receiver Ground).	1

Notes:

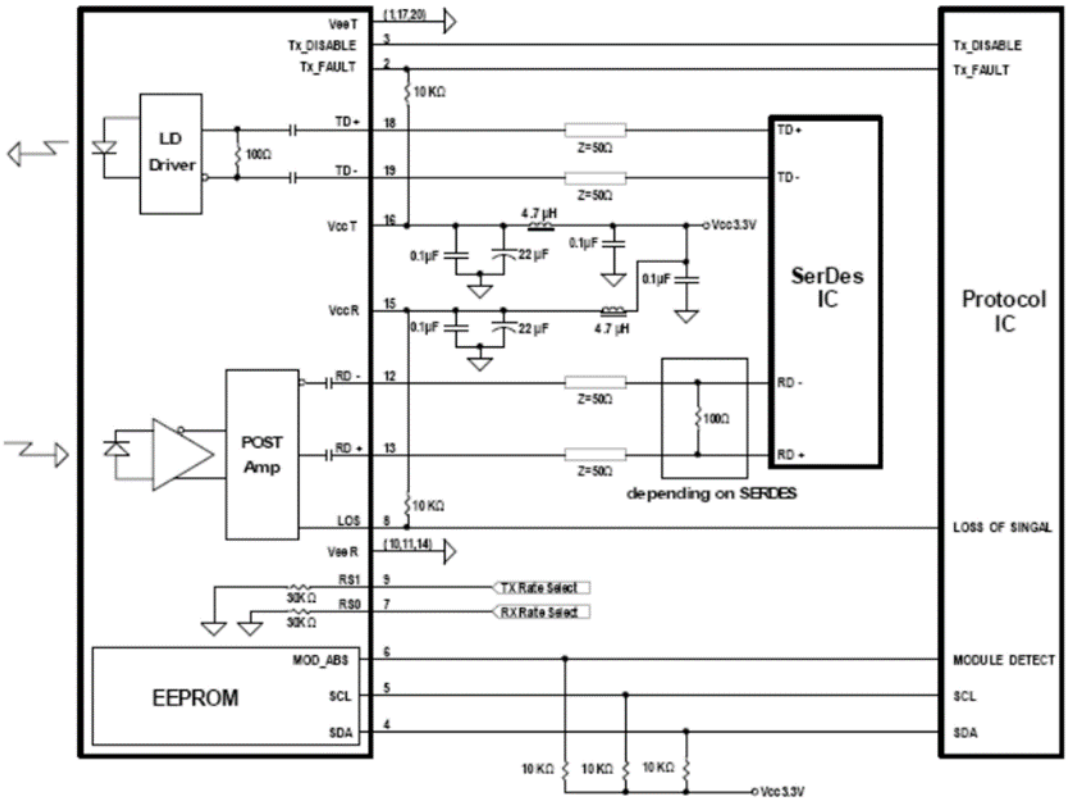
1. The module signal ground contacts, VeeR and VeeT, should be isolated from the module case.
2. This contact is an open collector/drain output and should be pulled up to the Vcc_Host with resister in the range 4.7KΩ to 10KΩ. Pull ups can be connected to one or several power supplies, however the host board design shall ensure that no module contract has voltage exceeding module VccT/R +0.5.V.

3. Tx_Disable is an input contact with a 4.7KΩ to 10KΩ pull-up resistor to VccT inside module.
4. Mod_ABS is connected to VeeT or VeeR in the SFP+ module. The host may pull the contract up to Vcc_Host with a resistor in the range from 4.7KΩ to 10KΩ. Mod_ABS is asserted “High” when the SFP+ module is physically absent from a host slot.
5. Internally pulled down per SFF-8431



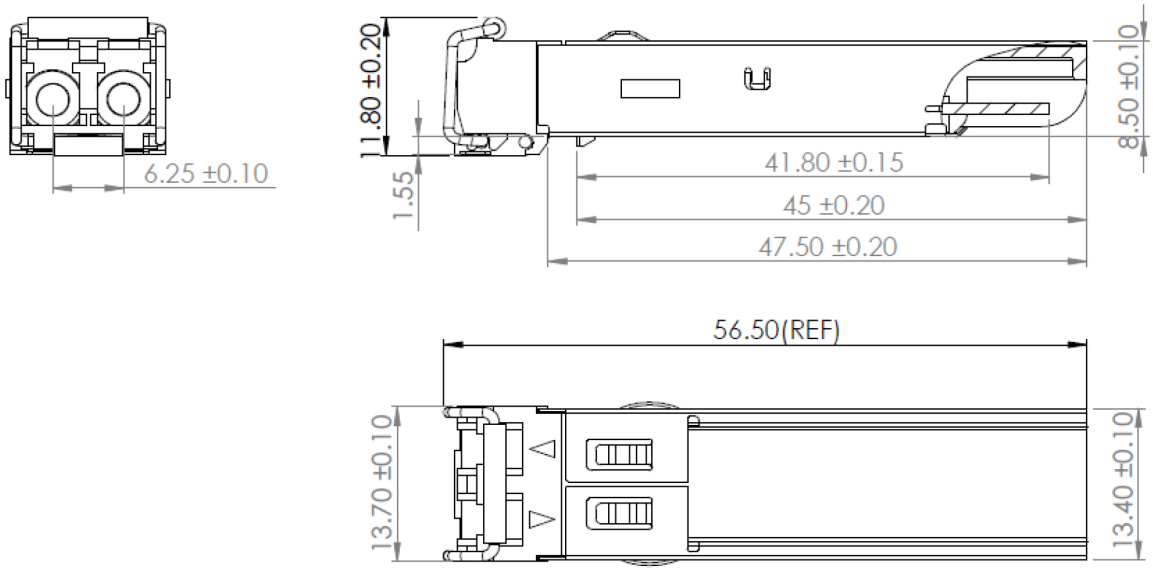
Pin-out of connector Block on Host board

Recommended Circuit Schematic



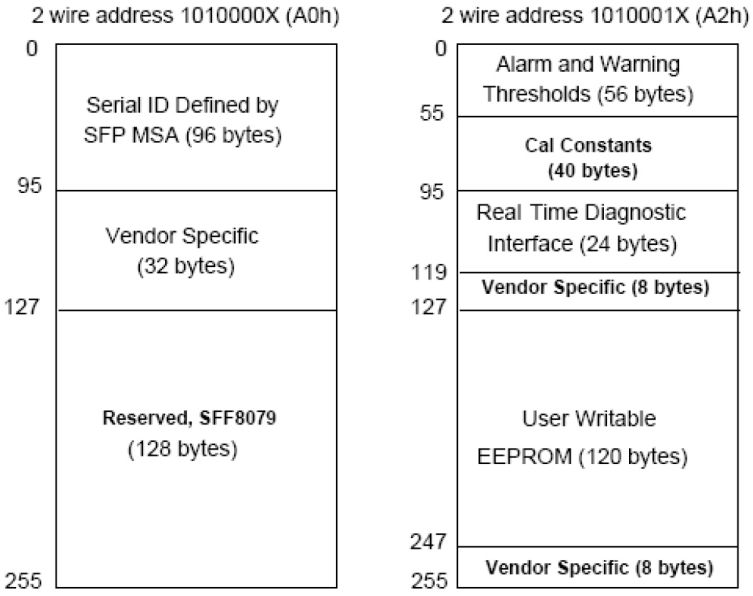
Mechanical Specifications

Small Form Factor Pluggable (SFP) transceivers are compatible with the dimensions defined by the SFP Multi-Sourcing Agreement (MSA).



EEPROM Information

EEPROM memory map specific data field description is as below:



About ProLabs

Our experience comes as standard; for over 15 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 over 90 optical switching and transport platforms.

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 400G 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.

Trusted Partner

Customer service is our number one value. ProLabs has invested in people, labs and manufacturing capacity to ensure that you get immediate answers to your questions and compatible product when needed. 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.

Contact Information

ProLabs US

Email: sales@prolabs.com
Telephone: 952-852-0252

ProLabs UK

Email: salessupport@prolabs.com
Telephone: +44 1285 719 600