

### 3FE46232BA-AO

Alcatel-Lucent Nokia® 3FE46232BAAA Compatible TAA 10GBs XGS PON OLT XFP Transceiver (SMF, 1577nmTx/1270nmRx, SC, N2, DOM)

#### Features

- Single fiber bi-directional data links TX 9.953Gbps, Burst Mode RX 9.953G/2.488Gbps application
- Complies with ITU G.987.2, ITU G.9807.1
- Complies with INF-8077i
- XFP package with SC Receptacle connector
- Hot Pluggable
- 3.3V power supply
- Single-mode Fiber
- High power 1577nm EML LD & High sensitivity 1270nm APD
- Low EMI and excellent ESD protection
- SD indication
- Digital diagnostic monitor interface
- RoHS compliant and Lead Free



#### Applications

- XGS PON OLT
- Access and Enterprise

#### Product Description

This Alcatel-Lucent Nokia® 3FE46232BA compatible XFP transceiver provides XGS-N2/C+ throughput up to 20km over single-mode fiber (SMF) using a wavelength of 1577nmTx/1270nmRx via a SC 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. 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
Maximum Supply Voltage	VCC3	-0.5		3.6	V
Storage Ambient Temperature	Tstg	-40		85	°C
Operating Case Temperature	Tc	0		70	°C
Operating Humidity	OH	5		85	%
Date Rate			9.953 2.488		Gbps

### Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Power Supply Voltage	Vcc3	3.13	3.3	3.47	V	
Power Supply Current	Icc3			1000	mA	
Power Consumption	P			3	W	
Transmitter						
Data Input Differential Swing		120		850	mV	1
Input Differential Impedance		90	100	110	Ω	
Transmitter Enable Voltage - Low		0		0.8	V	
Transmitter Disable Voltage - High		2.0		VCC	V	

### Notes:

1. CML input, AC coupled

## Optical Characteristics

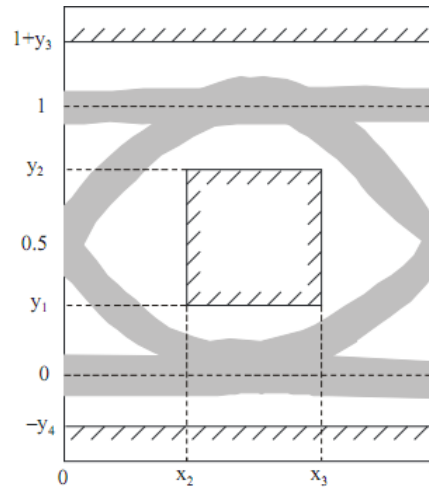
Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
<b>Transmitter</b>						
Optical Center Wavelength	$\lambda_C$	1575		1580	nm	
Optical Spectrum Width (-20dB)	$\Delta\lambda$			1	nm	
Side Mode Suppression Ratio	SMSR	30			dB	
Optical Wavelength Diagram	Compliant with ITU G.987.2					1
Average Launch Optical Power (BOL)	AOP2	+4.5		+8	dBm	2
Average Launch Optical Power (EOL)		+4		+8	dBm	
Power-OFF Transmitter Optical Power				-39	dBm	2
Extinction Ratio	ER	8.2			dB	3
Total Jitter	TJ			0.39	UI	3
RIN <sub>15</sub> OMA				-128	dB/Hz	
Transmitter Reflectance				-10	dB	
Transmitter and Dispersion Penalty	TDP			1	dB	4
<b>10G PON Receiver</b>						
Operating Wavelength		1260		1280	nm	
Max Optical input				0	dBm	5
Sensitivity	SEN			-28	dBm	6
Saturation Optical Power	SAT	-7			dBm	6
SD Assert Level				-29	dBm	
SD De-assert Level		-45			dBm	
Hysteresis		0.5		6	dB	
Receiver Reflectance				-12	dB	
<b>2.5G PON Receiver</b>						
Operating Wavelength		1260		1280	nm	
Max Optical input				0	dBm	5
Sensitivity	SEN			-29.5	dBm	7
Saturation Optical Power	SAT	-9			dBm	7
SD Assert Level				-30	dBm	
SD De-assert Level		-45			dBm	
Hysteresis		0.5		6	dB	
Receiver Reflectance				-20	dB	

### Notes:

1. Eye mask figure below, Mask Margin >5%

2. Launched into SMF
3. PRBS $2^{31}-1$  @9.953Gbps
4. Transmit on 20km SMF
5. Input without incurring damage
6. PRBS $2^{31}-1$ @9.953Gbps BER  $\leq 1 \times 10^{-3}$
7. PRBS  $2^{23}-1$ @2.488Gbps BER  $\leq 1 \times 10^{-4}$

### Transmitter Eye Mask Definitions and Test Procedure



X3-X2	Y1	Y2	Y3	Y4	Unit
0.2	0.25	0.75	0.25	0.25	UI

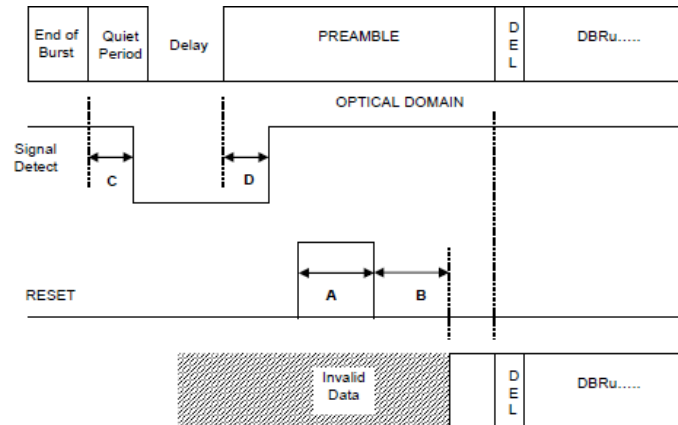
### Timing Parameter Definitions in Burst Mode Sequence

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
RSSI Trigger-Low		0		0.8	V	
RSSI Trigger-High		2.0		Vcc	V	
Data Output Differential Swing		340		850	mV	1
Reset-Low		0		0.8	V	
Reset-High		2.0		Vcc	V	
SD Voltage-Low		0		0.4	V	
SD Voltage-High		2.4		Vcc	V	
Reset Width	A	TBD			ns	
Reset to Valid Data Delay	B	TBD			ns	
SD De-assert Time	C			TBD	ns	
SD Assert Time	D			TBD	ns	
Data recovery time				400	ns	2
				400	ns	3

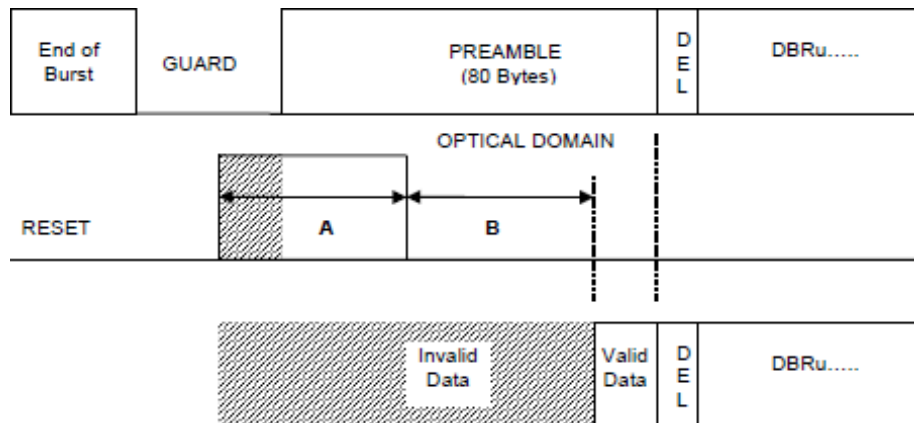
### Notes:

1. CML output, DC coupled
2. PRBS  $2^{23}-1$ @2.488Gbps
3. PRBS  $2^{31}-1$ @9.95Gbps

### Reset Signal Timing Diagram in Normal Mode



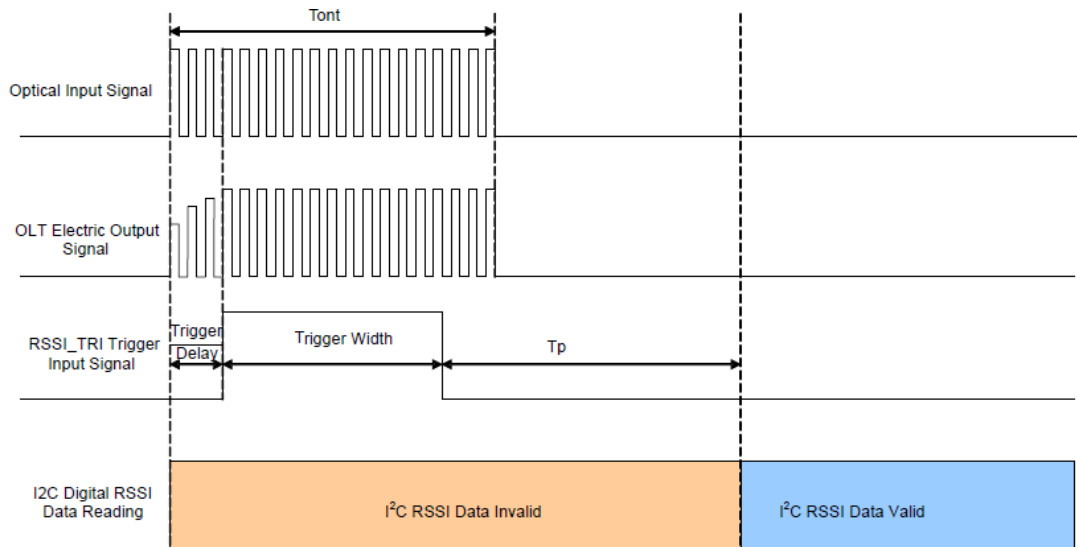
### Reset Signal Timing Diagram in Ranging Mode



### RSSI Timing Sequence

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Optical Signal During Time	Tont	1200			ns	
RSSI Trigger width	TW	500			ns	
RSSI Trigger Delay	TD	150			ns	
I <sup>2</sup> C Access Prohibited Time		500			μs	

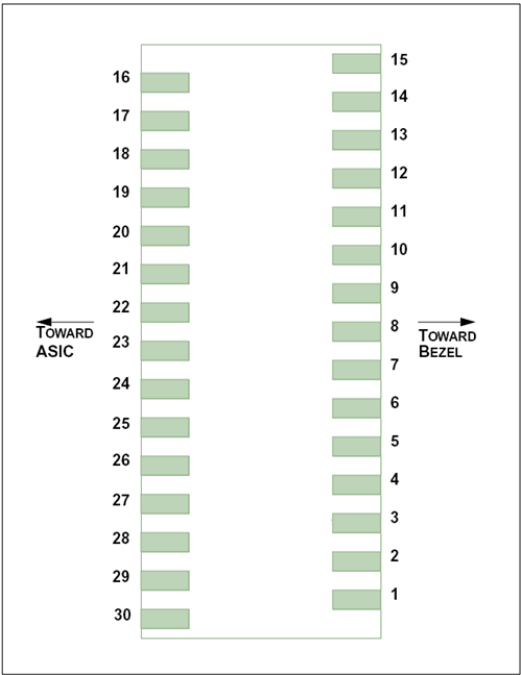
## Timing Parameter Definitions in RSSI Trigger



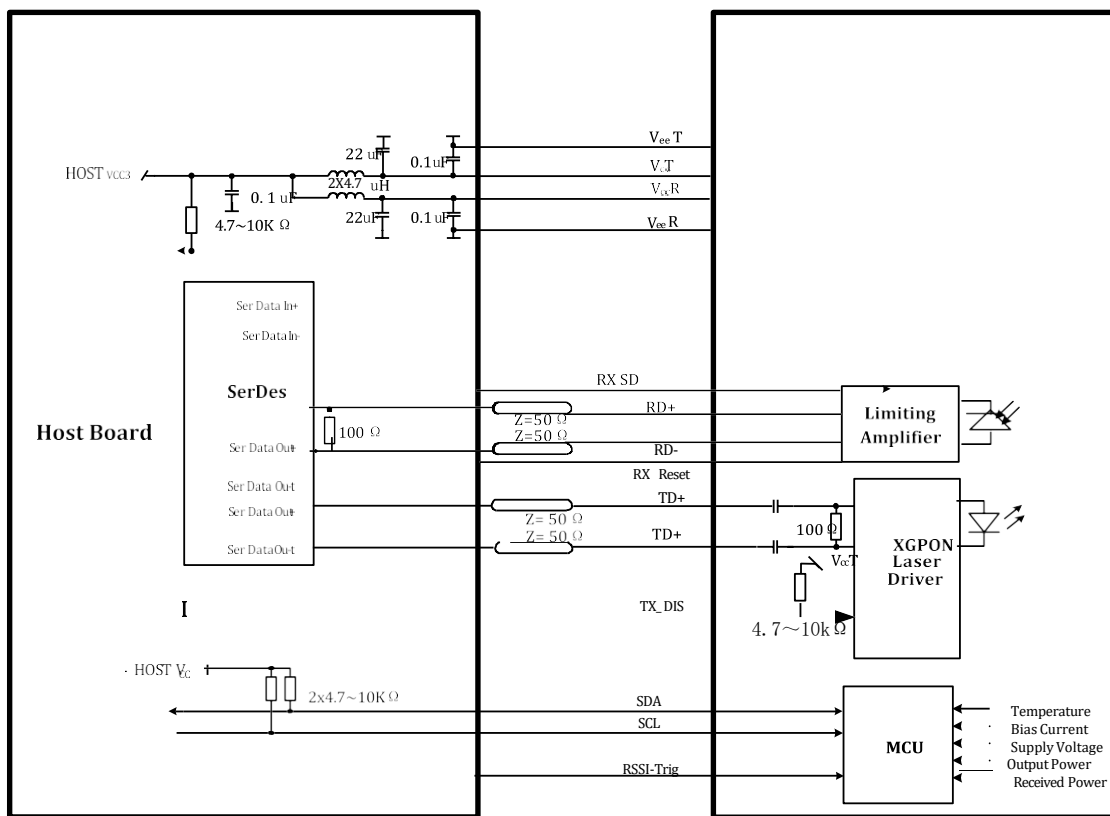
## Pin Descriptions

Pin	Name	Descriptions	Notes
1	GND	Module Ground	
2	TX_FAULT	Transmitter Status Indication	Low : Normal; High: Abnormal
3	NC	Not Connected	
4	NC	Not Connected	
5	TX_DIS	Transmitter Disable	LVTTTL Input by 10k pull up resistor, Low : transmitter on
6	NC	Not Connected	
7	GND	Module Ground	
8	VCC3_TX	Transmitter 3.3V Pow er Supply	
9	VCC3_RX	Receiver 3.3V Pow er Supply	
10	SCL	The clock line	The clock line of tw o w ire serial interface
11	SDA	The data line	The data line of tw o w ire serial interface
12	MOD_ABS	Indicates Module is not present.	Grounded in the Module
13	RX_Reset	Burst Receiver Reset	LVTTTL, High level Reset
14	SD	SD Indication	LVTTTL output, active LOW when the receiver lost signal
15	GND	Module Ground	
16	GND	Module Ground	
17	RD_N	Inverted Received Data Out	CML output, DC coupled; No squelch function
18	RD_P	Non-inverted Received Data Out	CML output, DC coupled; No squelch function
19	GND	Module Ground	

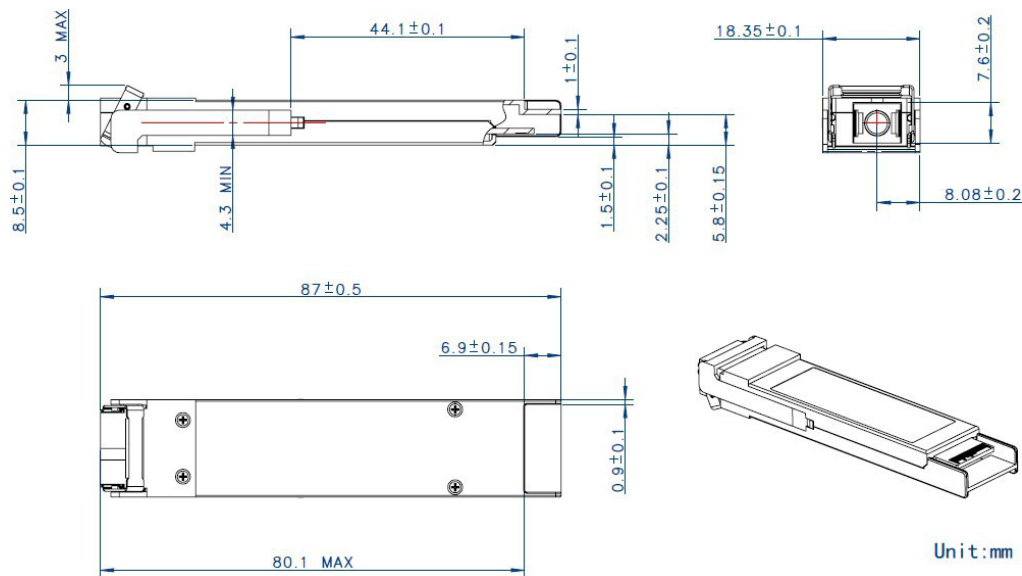
<b>20</b>	NC	Not Connected	
<b>21</b>	RSSI_TRIG	RSSI Trigger for Transceiver	High value indicates start RSSI measurement
<b>22</b>	NC	Not Connected	
<b>23</b>	GND	Module Ground	
<b>24</b>	NC	Not Connected	
<b>25</b>	NC	Not Connected	
<b>26</b>	GND	Module Ground	
<b>27</b>	GND	Module Ground	
<b>28</b>	TX_N	Inverted Transmit Data in	CML input, AC coupled
<b>29</b>	TX_P	Non-Inverted Transmit Data in	CML input, AC coupled
<b>30</b>	GND	Module Ground	



## Typical Interface Circuit



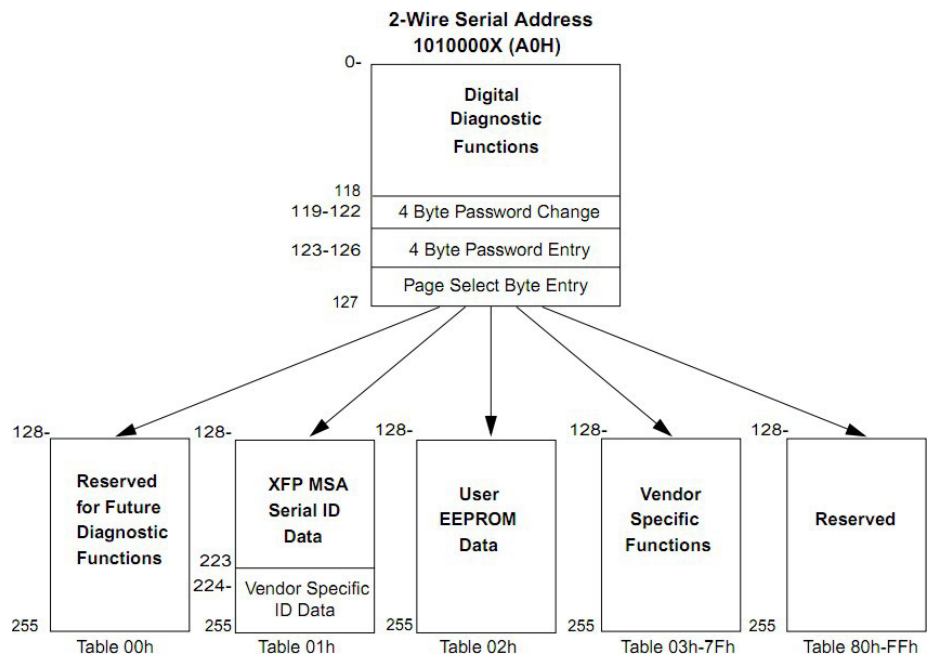
## Mechanical Specifications





**EEPROM Information**

EEPROM memory map specific data field description is as below:



## 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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