

3FE48541AA-C

Alcatel-Lucent Nokia 3FE48541AA Compatible TAA GPON ONT 2.4Gbs/1.2Gbs-C+ SFP Transceiver (SMF, 1310nmTx/1490nmRx, 20km, SC)

Features:

- SC Connector
- Single-mode Fiber
- Commercial Temperature 0 to 70 Celsius
- Hot Pluggable
- Metal with Lower EMI
- Excellent ESD Protection
- RoHS Compliant and Lead Free



Applications:

- GPON
- Access and Enterprise

Product Description

This Alcatel-Lucent Nokia 3FE48541AA compatible SFP transceiver provides 2.4Gbs/1.2Gbs-C+ throughput up to 20km over single-mode fiber (SMF) using a wavelength of 1310nmTx/1490nmRx 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. It is built to meet or exceed the specifications of Alcatel-Lucent Nokia, as well as to comply with MSA (Multi-Source Agreement) standards to ensure seamless network integration. 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	V _{CC}	0		3.6	V	1
Storage Ambient Temperature	T _{stg}	-40		+85	°C	1
Relative Humidity - Storage	RH _S	0		95	%	1
Operating Case Temperature	T _{CASE}	0		70	°C	1
Relative Humidity - Operating	RH _O	0		85	%	1
Downstream Signaling Speed +/- 100 ppm	S _{down}		2488		Mb/s	
Upstream Signaling Speed +/- 100 ppm	S _{up}		1244		Mb/s	
Control Function Logic Levels						
Transmit Burst Enable Logic HIGH State	Tx_Burst	0		V _{CC} +0.5	V	LVTTL
Transmit FAULT Logic HIGH State	Tx_Fault	0		V _{CC} +0.5	V	2
Receiver Loss of Signal High Logic	Rx_Los	0		V _{CC} +0.5	V	LVTTL
I ² C Serial Data Logic HIGH State	SDA	-		V _{CC} +0.5	V	LVTTL
I ² C Serial Clock HIGH State	SCL	-		V _{CC} +0.5	V	LVTTL

Notes:

1. Exceeding the Absolute Maximum Ratings may cause irreversible damage to the device. The device is not intended to be operated under the condition of simultaneous Absolute Maximum Ratings, a condition which may cause irreversible damage to the unit.
2. LVTTL (Laser is OFF / FAULT)

Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Module Supply Voltage	VCC	3.135	3.3	3.465	V	
Module Supply Current	IIN			400	mA	
Transmitter						
Tx_Data Differential Input Voltage	VIN	400		1600	mV	1
Tx_Burst = HIGH (Transmitter OFF / DISABLED)	VIH	2.0		V _{CC} +0.3	V	2, 3
Tx_Burst = LOW (Transmitter ON / ENABLED)	VIL	0		0.8	V	2, 3
Tx_FAULT = HIGH (FAULT Condition)	VOH	V _{CC} - 0.5		V _{CC} +0.3	V	4
Tx_FAULT = LOW (NORMAL)	VOL	0		0.8	V	4
Tx_SD = HIGH (Transmitter ON)	VIH	2.0		V _{CC} +0.3	V	
Tx_SD= LOW (Transmitter OFF)	VIL	0		0.8	V	
Receiver						
Rx_Data Differential Output Voltage	VOUT	200		1600	mV	5
Rx_Los = LOW (Receiver ON / NORMAL)	VOH	0		0.8	V	
Rx_Los = HIGH (Receiver OFF / Loss of Signal)	VOL	V _{CC} -0.5		V _{CC} +0.3	V	

Notes:

1. LVPECL Tx_DATA Electrical Signal
2. LVTTTL (Control INPUT)
3. Transmitter Enable Control Level can be chosen, High Enable and Low enable are compatible.
4. LVTTTL (Monitor OUTPUT)
5. CML Rx_DATA Electrical Signal

Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Transmitter Type		1310nm DFB Burst Mode				
Transmitter Control		Burst Mode ON/OFF				1
Upstream Signaling Speed	Sup		1244		Mb/s	
Average Output Power (9/125 μ m SMF)	P _{out}	0.5		5	dBm	
Optical Output with Tx OFF	POFF			-45	dBm	
Optical Center Wavelength	λ	1290	1310	1330	nm	
Spectral Line Width @ -20 dB	$\Delta\lambda$			1.0	nm	
Side Mode Suppression Ratio	SMSR	30			dB	
Extinction Ratio	ER	10			dB	
Transmitter Turn ON / Turn OFF Time	t _{ON} / t _{OFF}			12.8	ns	
Peak to Peak Jitter	JP-P			0.2	UI	
Receiver						
Receiver Type		1490nm CW Mode				
Optical Signal Monitor		Loss of Signal				2
Optical Center Wavelength	λ	1480	1490	1500	nm	
Downstream Signaling Speed	S _{down}		2488		Mb/s	
Receiver Sensitivity	P _{iN}			-28	dBm	3
Receiver Optical Overload	P _{IN} (SAT)	-8			dBm	3
Rx_Los Assert	P _a	-45			dBm	
Rx_Los Deassert	P _d			-28.5	dBm	
Optical Isolation from External Source	ISO	25			dB	

Notes:

1. Tx_Burst = Burst Mode Control
2. Rx_Los Monitors Rx ON / OFF state
3. BER<10⁻¹⁰, 2488 Mb/s, PRBS 2²³- 1

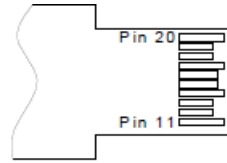
Pin Description

PIN	Symbol	Name / Description	Notes
1	VEET	Transmitter Ground	
2	Tx_FAULT	Transmitter Fault, LOW = Normal Operation, HIGH = Fault Indication	1
3	Tx_DIS	Transmit Disable, LOW = Normal Operation, HIGH = Disables Module	1
4	MOD_DEF 2	Module Definition 2 - Two-Wire Interface - Serial Data	1
5	MOD_DEF 1	Module Definition 1 - Two-Wire Interface - Clock Signal	1
6	MOD_DEF 0	Module Definition 0 - Presence Pin, the MOD_DEF0 Signal set to low level after initialization of μ C and power up the I2C interface	
7	Dying Gasp	Dying Gasp Indication, when high indicates normal operation, low indicates power fail	4
8	LOS	Loss of Signal, When high indicates no optical power; Low indicates normal operation	1
9	VEER	Receiver Ground	
10	VEER	Receiver Ground	
11	VEER	Receiver Ground	
12	RD-	Rx_Data Output (Inverted)	2
13	RD+	Rx_Data Output (Non Inverted)	2
14	VEER	Receiver Ground	
15	VCCR	Receiver DC Power	3.3 V +/- 5%
16	VCCT	Transmitter DC Power	3.3 V +/- 5%
17	VEET	Transmitter Ground	
18	TD+	Tx_Data Input (Non Inverted)	3
19	TD-	Tx_Data Input (Inverted)	3
20	VEET	Transmitter Ground	

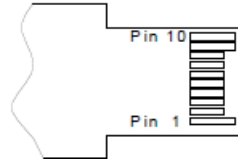
Notes:

1. The uncommitted Tx_FAULT, Tx_DIS, MOD_DEF2 ,MOD_DEF1 and LOS monitor and control pins each require a pull up resistor of 4.7k to 10k Ohms. The pull-up voltage must be 3.3V.
2. The 100Ohms differential Rx Data output is internally AC coupled. Supporting both 1000BASE-X/SGMII interface
3. The 100Ohms differential Tx Data input is internally AC coupled. Supporting both 1000BASE-X/SGMII interface
4. Voltage Detect Input for Dying Gasp. When the voltage on this pin is lower than 1.23V+/-5%, a dying gasp event is triggered. A 4.7k Ohm resistor is used to pull up to DC Power in the module.

TOP VIEW
OF BOARD

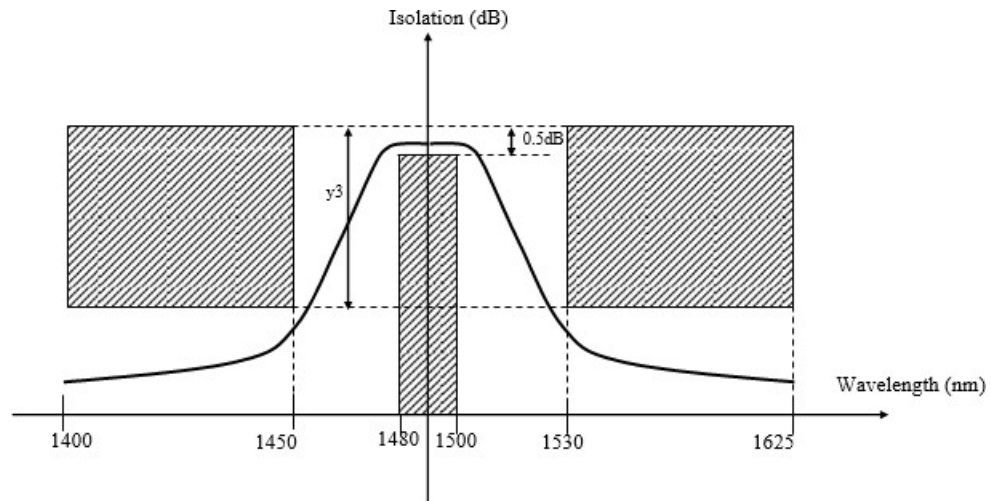


BOTTOM VIEW
OF BOARD



Pin-out of connector Block on Host board

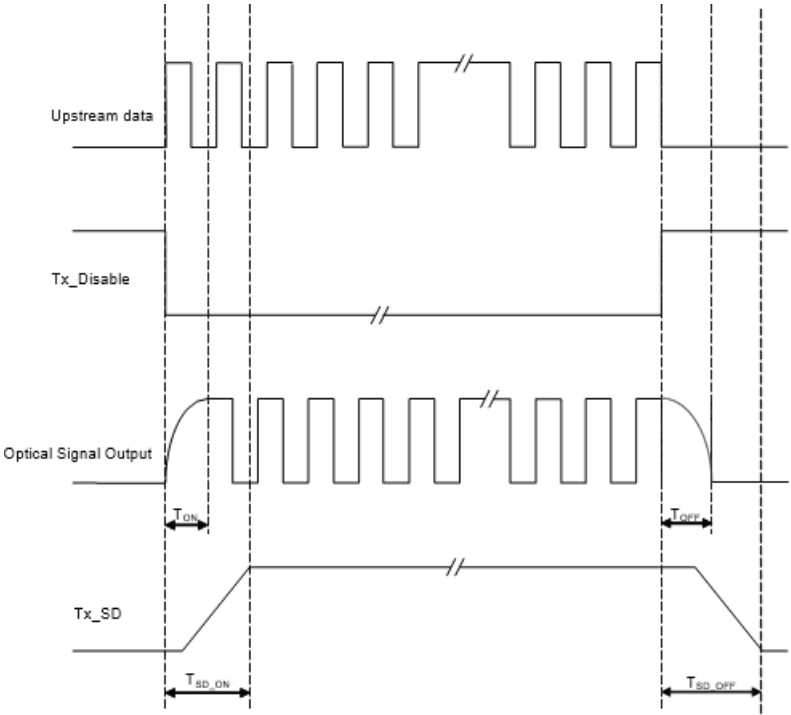
WBF Isolation Characteristics



WBF Isolation Characteristics

Wavelength (nm)	1400~1441	1450	1530	1539~1625
Isolation (dB)	y_3	y_3	y_3	y_3
	>35	>25	>25	>35

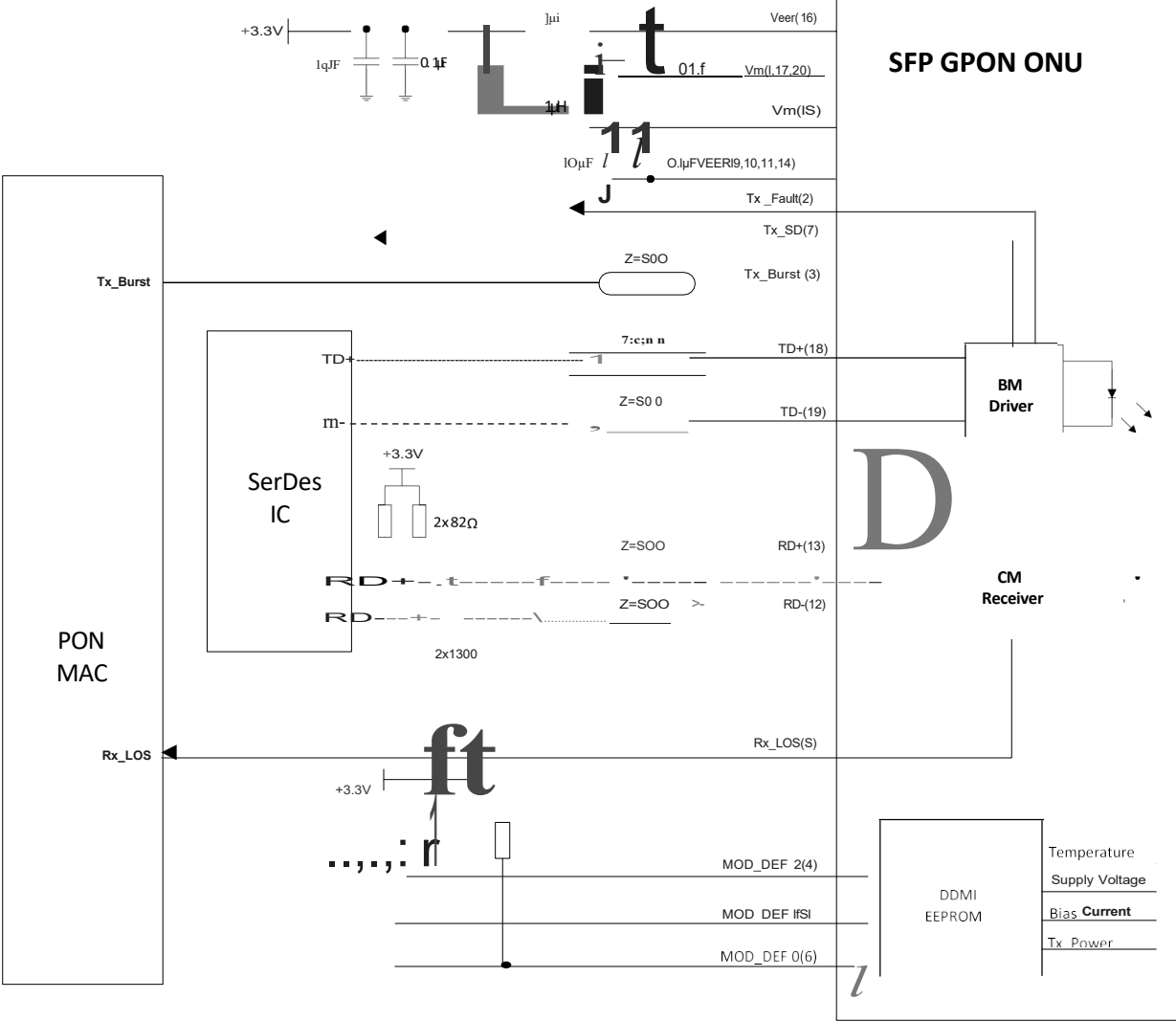
Timing Diagram



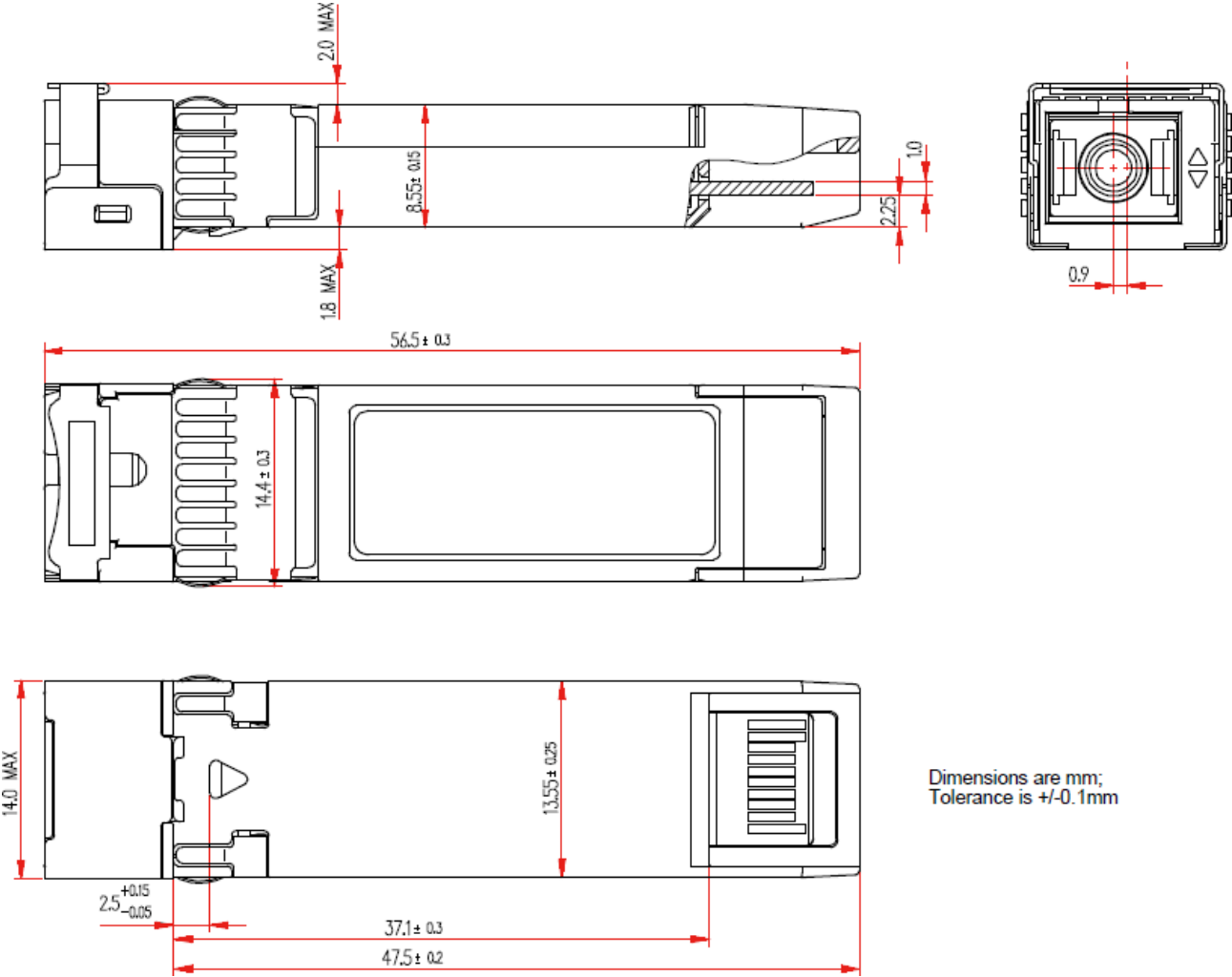
Timing Diagram Characteristics

Parameter	Symbol	Min	Typ	Max	Units
Transmitter Turn ON Time	T _{ON}			12.8	ns
Transmitter Turn OFF Time	T _{OFF}			12.8	ns
Tx_SD Assert Time	T _{SD_ON}			350	ns
Tx_SD Deassert Time	T _{SD_OFF}			350	ns

Electrical Interface



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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