

3FE48541AA-OPC

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.

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:

- 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.
- 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

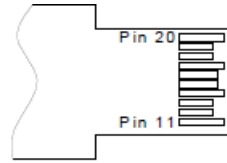
Pin Description

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	

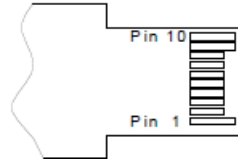
Notes:

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

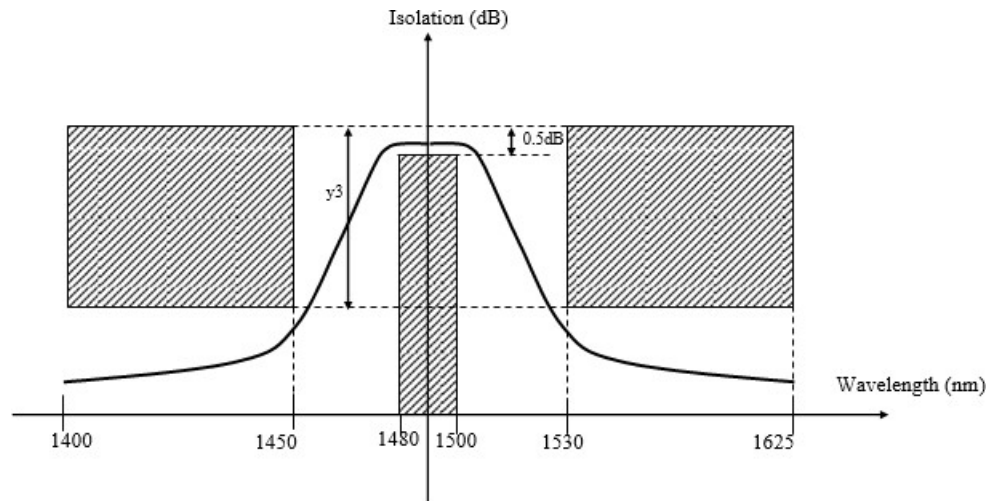


BOTTOM VIEW
OF BOARD



Pin-out of connector Block on Host board

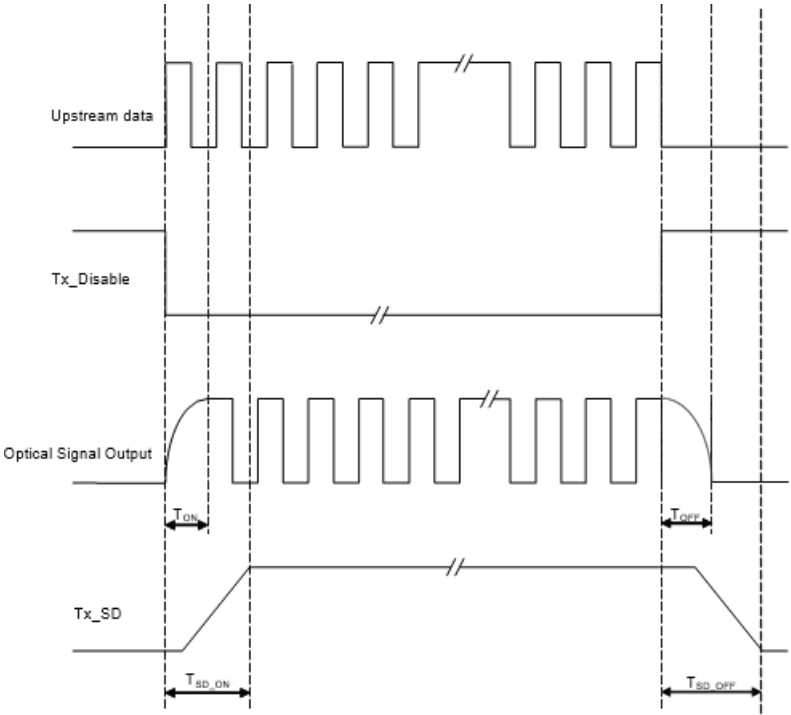
WBF Isolation Characteristics



WBF Isolation Characteristics

Wavelength (nm)	1400~1441	1450	1530	1539~1625
Isolation (dB)	y3	y3	y3	y3
	>35	>25	>25	>35

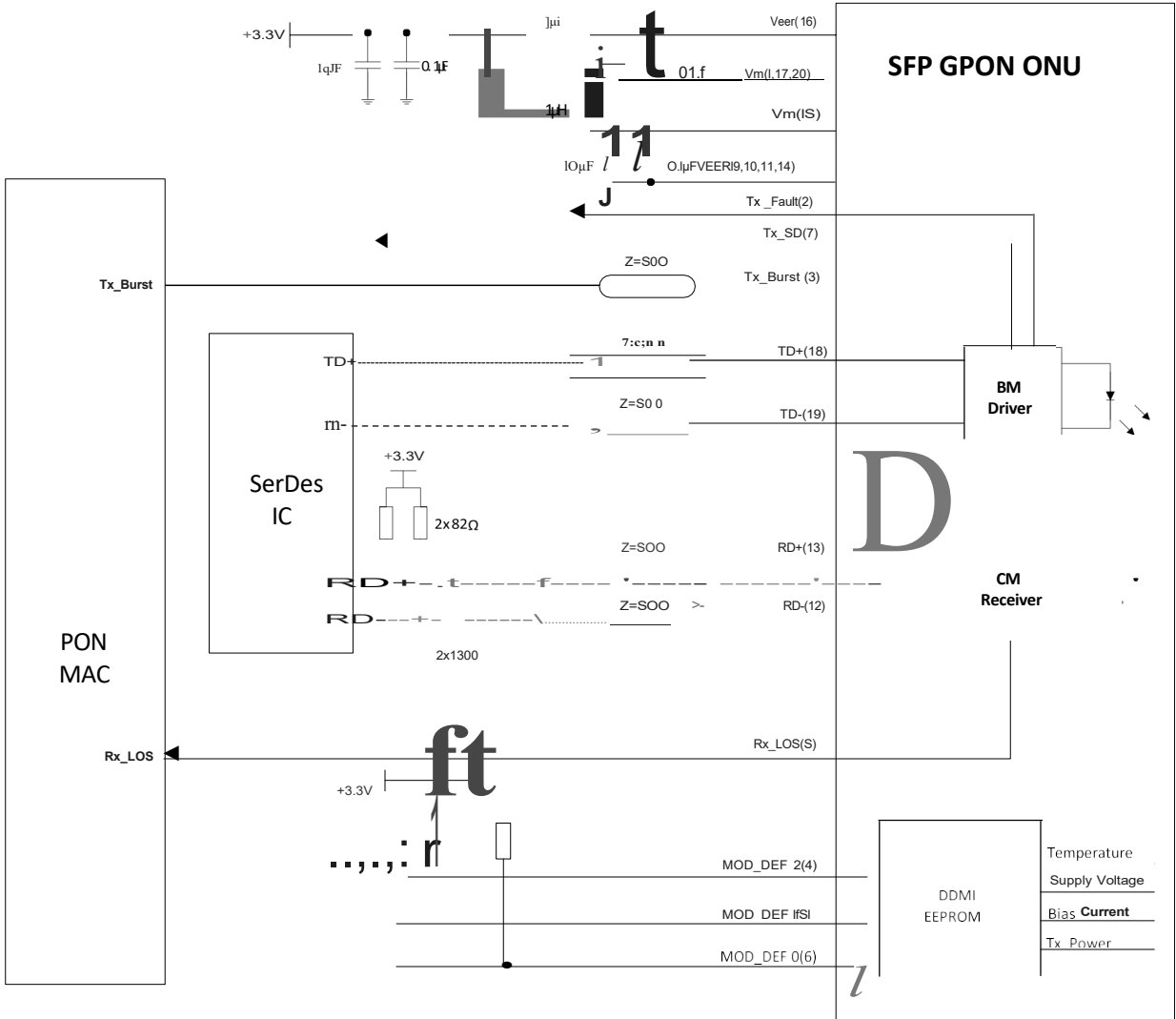
Timing Diagram



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

