



# RF-LAMBDA

LEADER OF RF BROADBAND SOLUTIONS

## RFLNPA2123A

### 50W (Psat) Linear Power Amplifier 2100-2400MHz



#### Features

- Functional Bandwidth : 1.8GHz to 2.5GHz
- Gain: 50dB typical
- Output power +44dBm typical
- Supply Voltage: +28V @ 7.5A
- 50 Ohm Matched Input / Output
- Size: 6.70" x 4.73" x 1.0"

#### Typical Applications

- Wireless Infrastructure
- RF Microwave & VSAT
- Military & Aerospace
- Test Instrument

Electrical Specifications,  $T_A = +25^\circ\text{C}$ ,  $V_{CC} = +28\text{V}$

Parameter		Min.	Typ.	Max.	Units
Frequency Range		2100		2400	MHz
Gain		48	50		dB
Gain Flatness			$\pm 2.0$		dB
Gain Delta /Temp				0.025	dB/ $^\circ\text{C}$
Input VSWR				1.5	: 1
Output VSWR				1.5	: 1
Max. Load VSWR (VSWR load >6:1, Pout >10W PA shut down)				6.0	: 1
ACPR	BW=3.84MHz		-32		dBc
	Offset 5MHz				
	PAR 7.0dB				
	CCDF 0.01%				
Linear Pout (WCDMA)			42		dBm
PAE (Pout=P3dB)			30		%
IMD	Non-Harmonics			-65	dBc
	Harmonics			-30	dBc
P3dB			47		dBm
Output 1dB Compression Point (P1dB)			43		dBm
Saturated Output Power (Psat)			47		dBm
Isolation S12			-60		dB
PA Start Up Time (Pin 4)				500	ms
PA Enable Shutdown Time (Pin 4)			500		ms
PA Fast Shutdown (Pin 7 = High $\rightarrow$ Low)			2		us
PA Fast Enable (Pin 7 = Low $\rightarrow$ High)			5		us
Supply Current			7.5	10	A
Weight			32.5		ounces
Impedance			50		Ohms
Interface and Control Connector		DB9-Male			
Input / Output Connectors		SMA-Female			
Finishing		Nickel plating			
Material		Aluminum			
Package Sealing		Epoxy Sealing (Standard)			

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### Amplifier Use

Ensure that the amplifier input and output ports are safely terminated into a proper 50 ohm load before turning on the power. Never operate the amplifier without a load. A proper 50 ohm load is defined as a load with impedance less than 1.9:1 or return loss larger than 10dB relative to 50 Ohm within the specified operating band width.

#### Power Supply Requirements

Power supply must be able to provide adequate current for the amplifier. Power supply should be able to provide 1.5 times the typical current or 1.2 times the maximum current (whichever is greater).

In most cases, RF-Lambda amplifiers will withstand severe mismatches without damage. However, operation with poor loads is discouraged. If prolonged operation with poor or unknown loads is expected, an external device such as an isolator or circulator should be used to protect the amplifier.

Ensure that the power is off when connecting or disconnecting the input or output of the amp.

Prevent overdriving the amplifier. Do not exceed the recommended input power level.

Adequate heat-sinking required for RF amplifier modules. Please inquire.

Amplifiers do not contain Thermal protection, Reverse DC polarity or Over voltage protection with the exception of a few models. Please inquire.

Proper electrostatic discharge (ESD) precautions are recommended to avoid performance degradation or loss of functionality.

#### What is not covered with warranty?

Each of RF-Lambda amplifiers will go through power and temperature stress testing. Due to fragile of the die, IC or MMIC, those are not covered by warranty. Any damage to those will NOT be free to repair.



### Absolute Maximum Ratings

Operating Voltage	+30V
RF Input Power	+5dBm
TTL Control Voltage	0~0.8V/2~5V

### Biasing Up Procedure

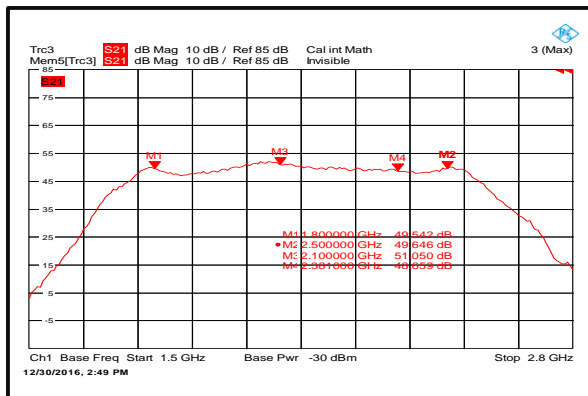
Step 1	Connect Ground Pin
Step 2	Connect input and output
Step 3	Connect +28V biasing
Step 4	Apply TTL = High to Pin 4
Step 5	Apply TTL = High to Pin 7
Power OFF Procedure	
Step 1	Turn off +28V biasing
Step 2	Remove RF connection
Step 3	Remove Ground

### Environmental Specifications

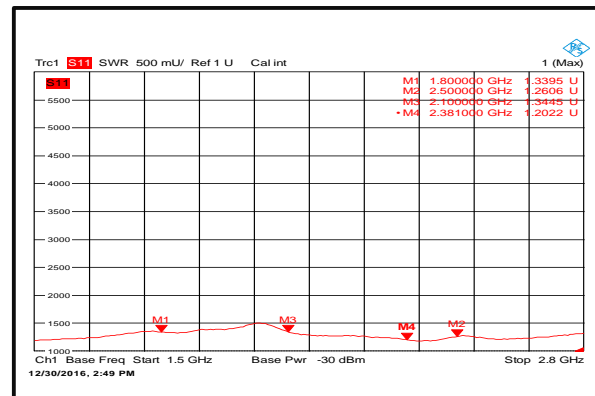
Operational Temperature (°C)	-20 ~ +75 (Case Temperature)
Storage Temperature (°C)	-20 ~ +75
Altitude	30,000 ft. (Epoxy Sealed Controlled environment)
	60,000 ft. 1.0psi min (Hermetically Sealed Un-controlled environment) (Optional)
Vibration	25g RMS (15 degrees 2KHz) endurance, 1 hour per axis
Humidity	100% RH at 35c, 95%RH at 40°C
Shock	20G for 11msec half sine wave, 3 axis both directions

### Typical Performance Plots

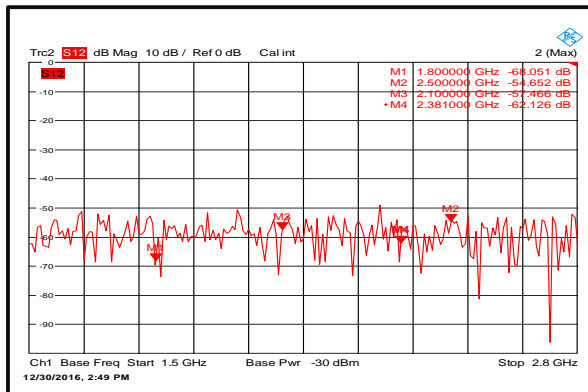
#### Gain



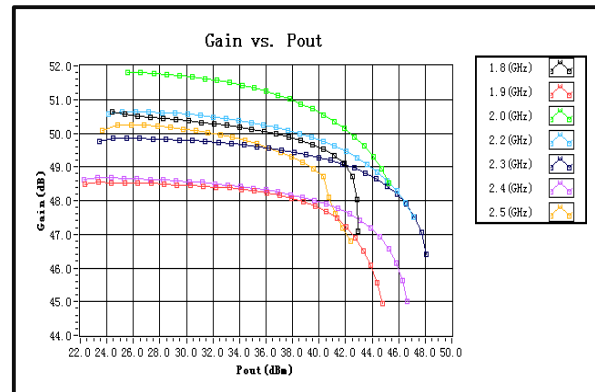
#### Input VSWR



#### Isolation

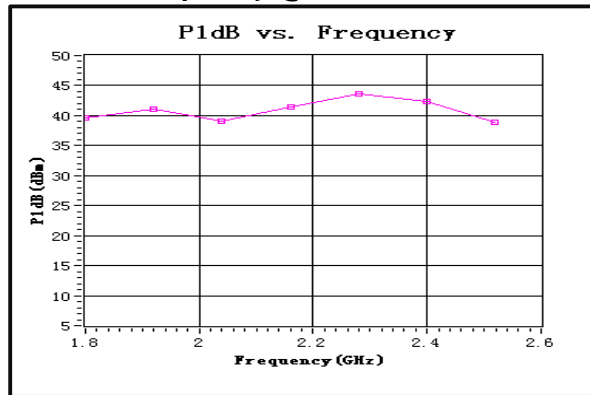


#### Gain vs. Output Power

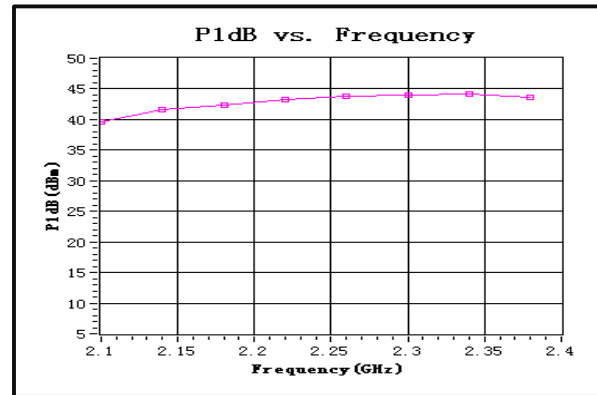




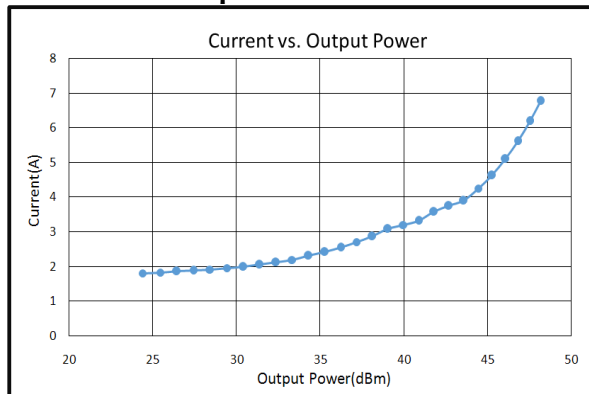
**P1dB vs. Frequency @1.8-2.5GHz**



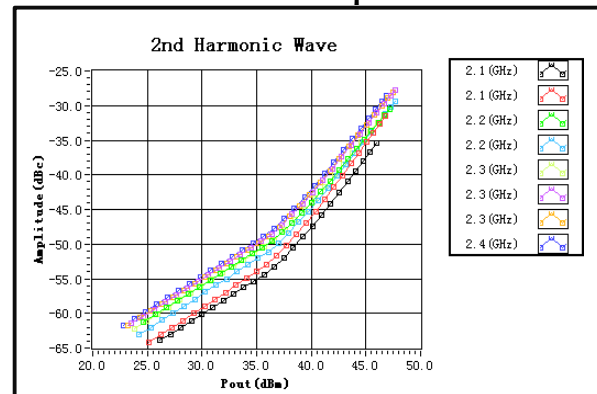
**P1dB vs. Frequency @2.1-2.38GHz**



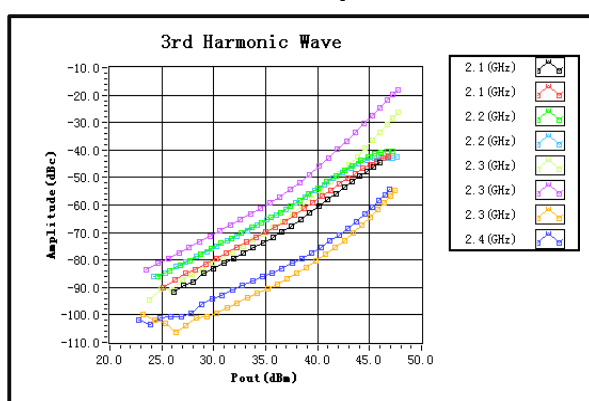
**Current vs. Output Power**



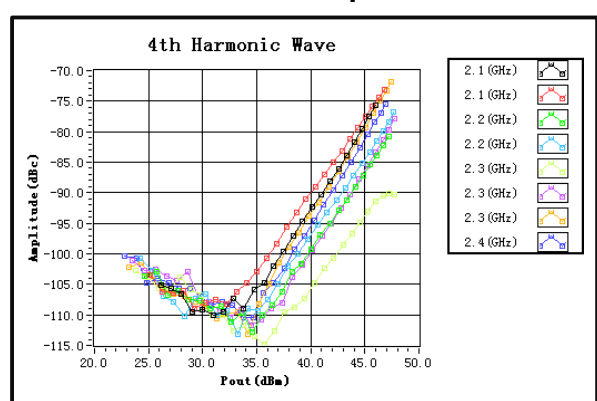
**2nd Harmonic Wave Output Power**



**3rd Harmonic Wave Output Power**



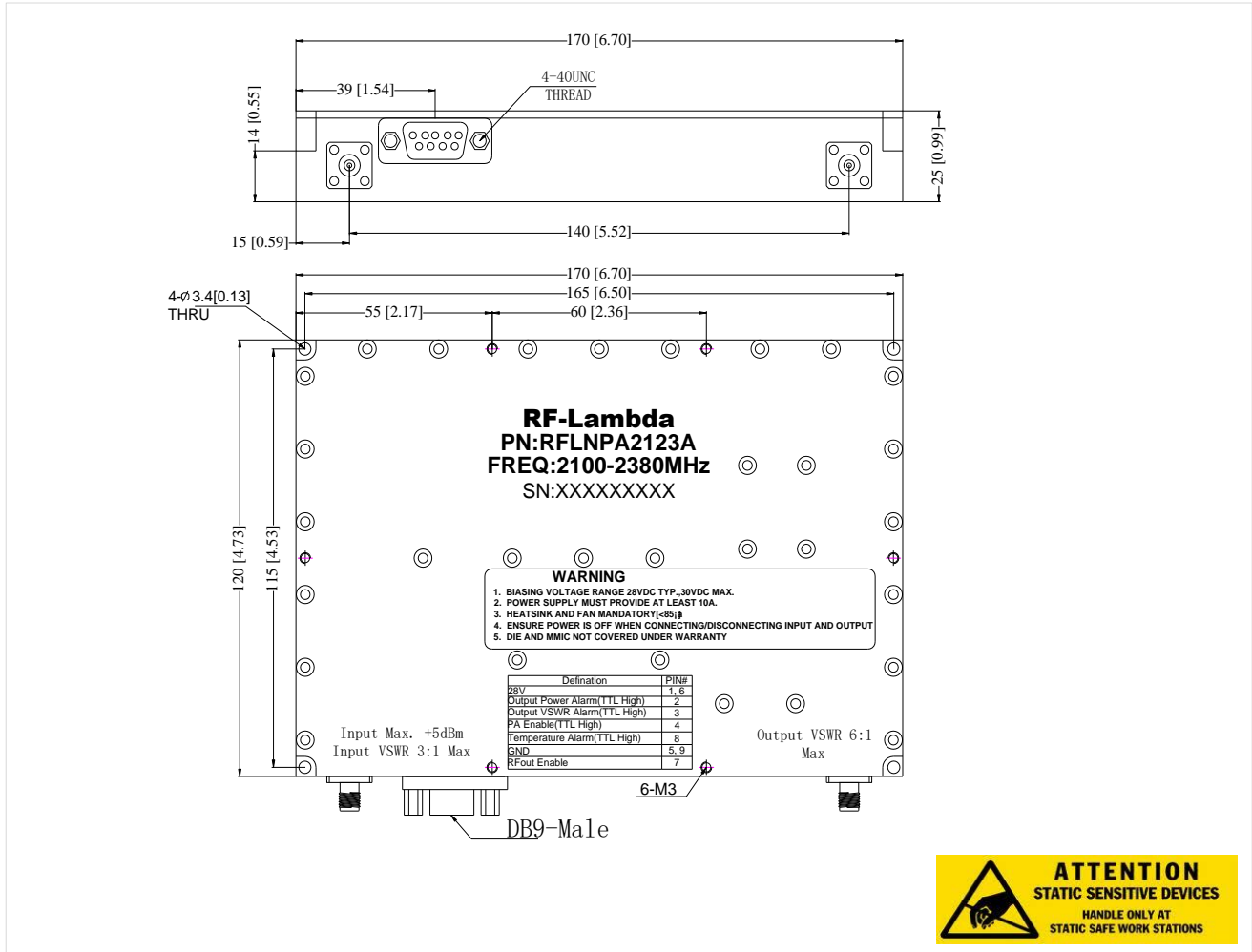
**4th Harmonic Wave Output Power**





### Outline Drawing:

All Dimensions in mm [inches]  
Heat Sink required during operation



### Ordering Information

Part No.	ECCN	Description
RFLNPA2123A	EAR99	2.1~2.4GHz Power Amplifier

### Important Notice

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