



Wide Band Solid State Power Amplifier 0.1GHz~3GHz



Features

- Gain: 41dB Typical
- Output power +41dBm Typical
- Supply Voltage: +48V
- 50 Ohm Matched Input / Output

Typical Applications

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

Electrical Specifications, TA = +25°C, Vcc = +48V

Parameter	Min.	Typ.	Max.	Units
Frequency Range	0.1		3.0	GHz
Gain	35	41		dB
Gain Flatness		±2.5		dB
Gain Variation Over Temperature (-45 ~ +85)		±3.0		dB
Input VSWR		2.0		:1
Output Power for 1 dB Compression (P1dB)	34	36		dBm
Saturated Output Power (Psat)		41		dBm
Isolation S12		-45		dB
DC Quiescent Current (No RF Input Power)		750	800	mA
DC Current (Vcc=+48V) at Pout=Psat		1.2	1.5	A
Efficiency at Psat (RF Output Power / DC Power Consumption)		21		%
Weight	13.76			ounces
Impedance	50			Ohms
Input / Output Connectors	SMA - Female			
Finish	Nickel Plated			
Material	copper			
Package Sealing	Epoxy Sealed (Standard)			
	Hermetically Sealed (Optional)			

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Absolute Maximum Ratings

Operating Voltage	+50V
RF Input Power	+8dBm

Biasing Up Procedure

Step 1	Connect Ground Pin
Step 2	Connect input and output
Step 3	Connect +48V biasing
Power OFF Procedure	
Step 1	Turn off +48V biasing
Step 2	Remove RF connection
Step 3	Remove Ground.

Environmental Specifications and Test Standards

Parameter	Standard	Description
Operational Temperature	MIL-STD-39016	-40°C~+85°C (Case Temperature)
Storage Temperature		-55°C~+125°C
Thermal Shock		1 Hour@ -45°C → 1 Hour @ +85°C (5 Cycles)
Random Vibration		Acceleration Spectral Density 6 (m/s) Total 92.6 RMS
Electrical & Temperature Burn In		Temperature +85°C for 72 Hours
Shock		1. Weight >20g, 50g half sine wave for 11ms, Speed variation 3.44m/s 2. Weight <=20g, 100g Half sine wave for 6ms, Speed variation 3.75m/s 3. Total 18 times (6 directions, 3 repetitions per direction).
Altitude		Standard: 30,000 Ft (Epoxy Sealed Controlled Environment) Optional: Hermetically Sealed (60,000 ft. 1.0 PSI min)
Hermetically Sealed (Optional)	MIL-STD-883	MIL-STD-883 (For Hermetically Sealed Units)

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Application Note

Step 1. RF Input and output ports must be fully connected or terminated with 50 ohm impedance. The input RF signal must be turned off.

Step 2. After connecting the +48V DC bias (Current approx. 750mA)

Step 3. Turn on RF Input power.

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.

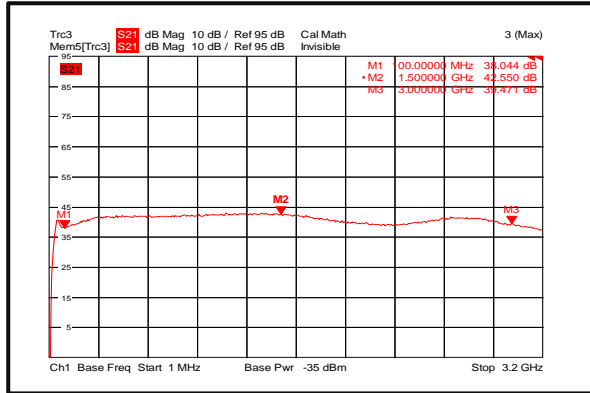
What is not covered with warranty?

Each RF - Lambda amplifier will go through power and temperature stress testing. Since the die, ICs or MMICs are fragile, these are not covered by warranty. Any damage to these will NOT be free to repair.

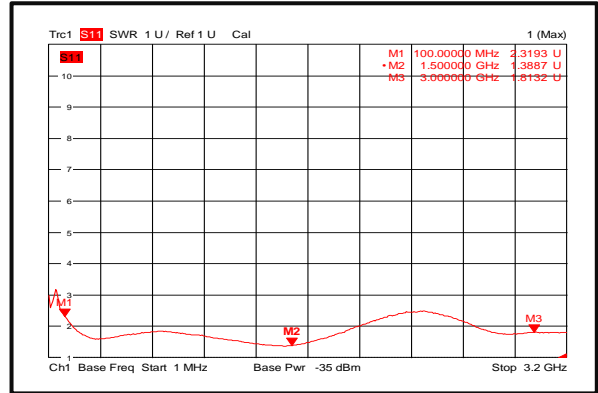


Typical Performance Plots

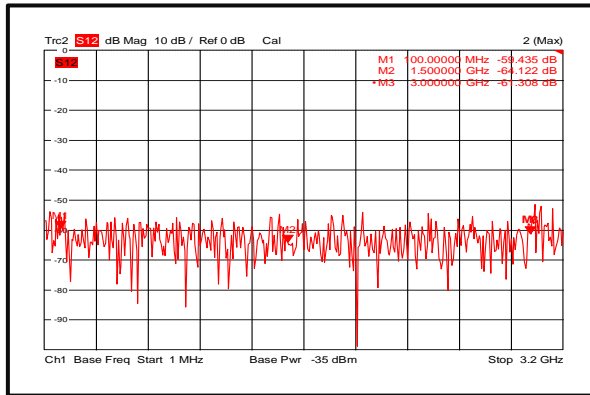
Gain



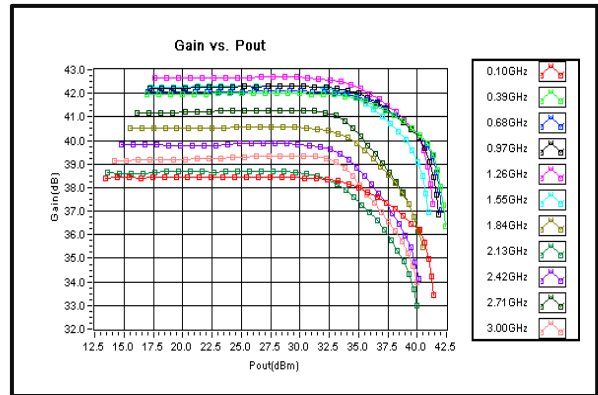
Input VSWR



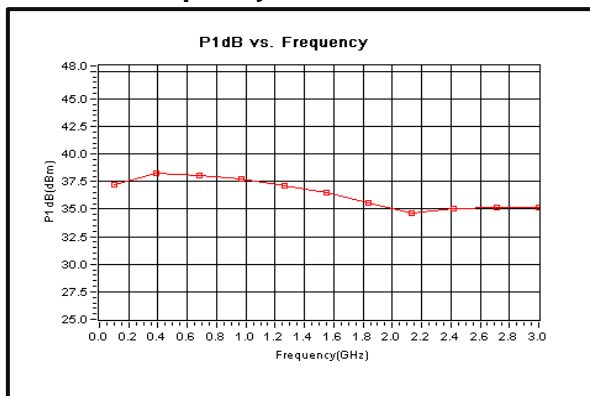
Isolation



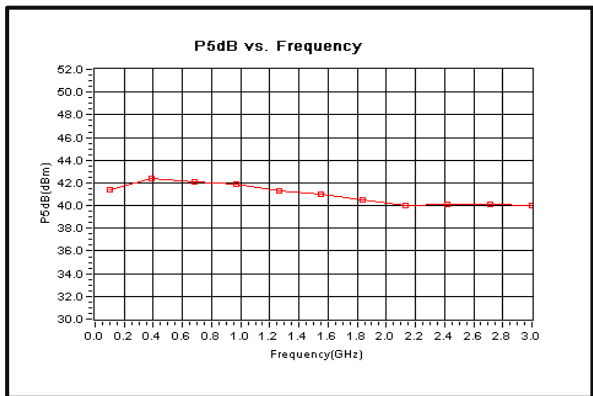
Gain vs. Output Power



P1dB vs. Frequency



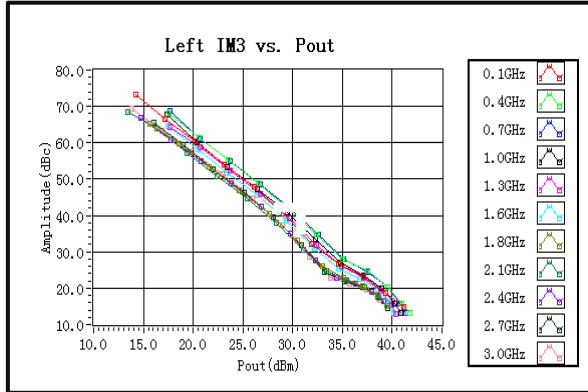
P5dB vs. Frequency



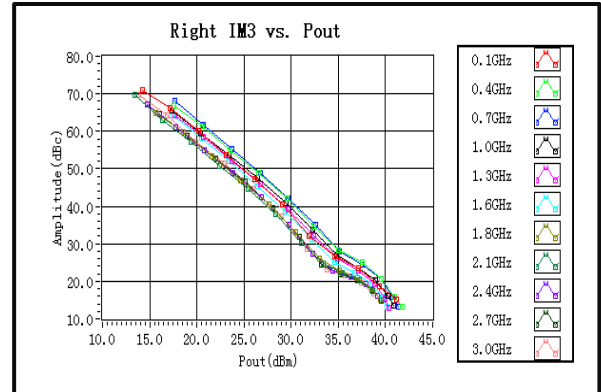
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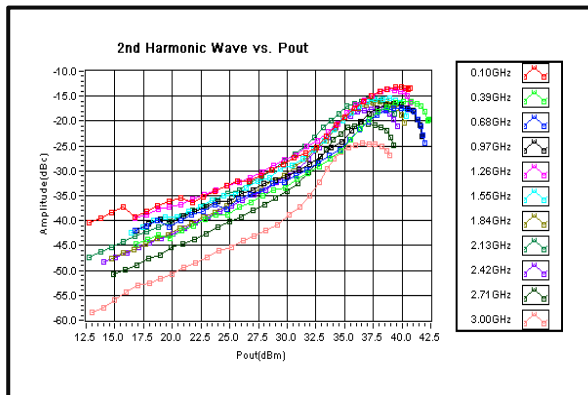
Left IM3 vs. Pout



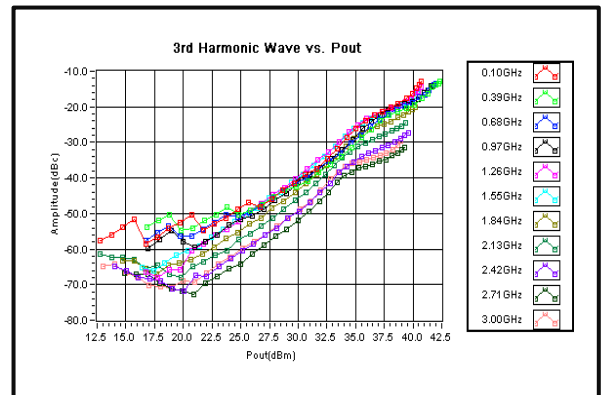
Right IM3 vs. Pout



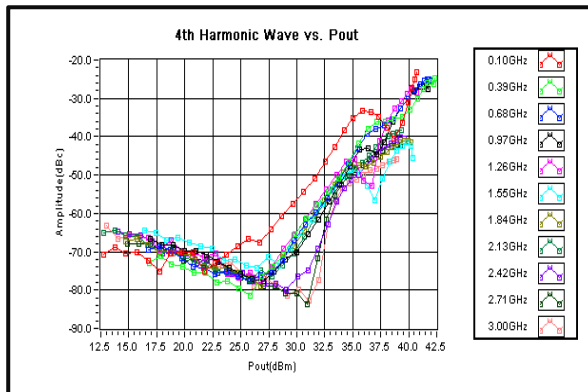
2nd Harmonic Wave Output Power



3rd Harmonic Wave Output Power



4th Harmonic Wave Output Power

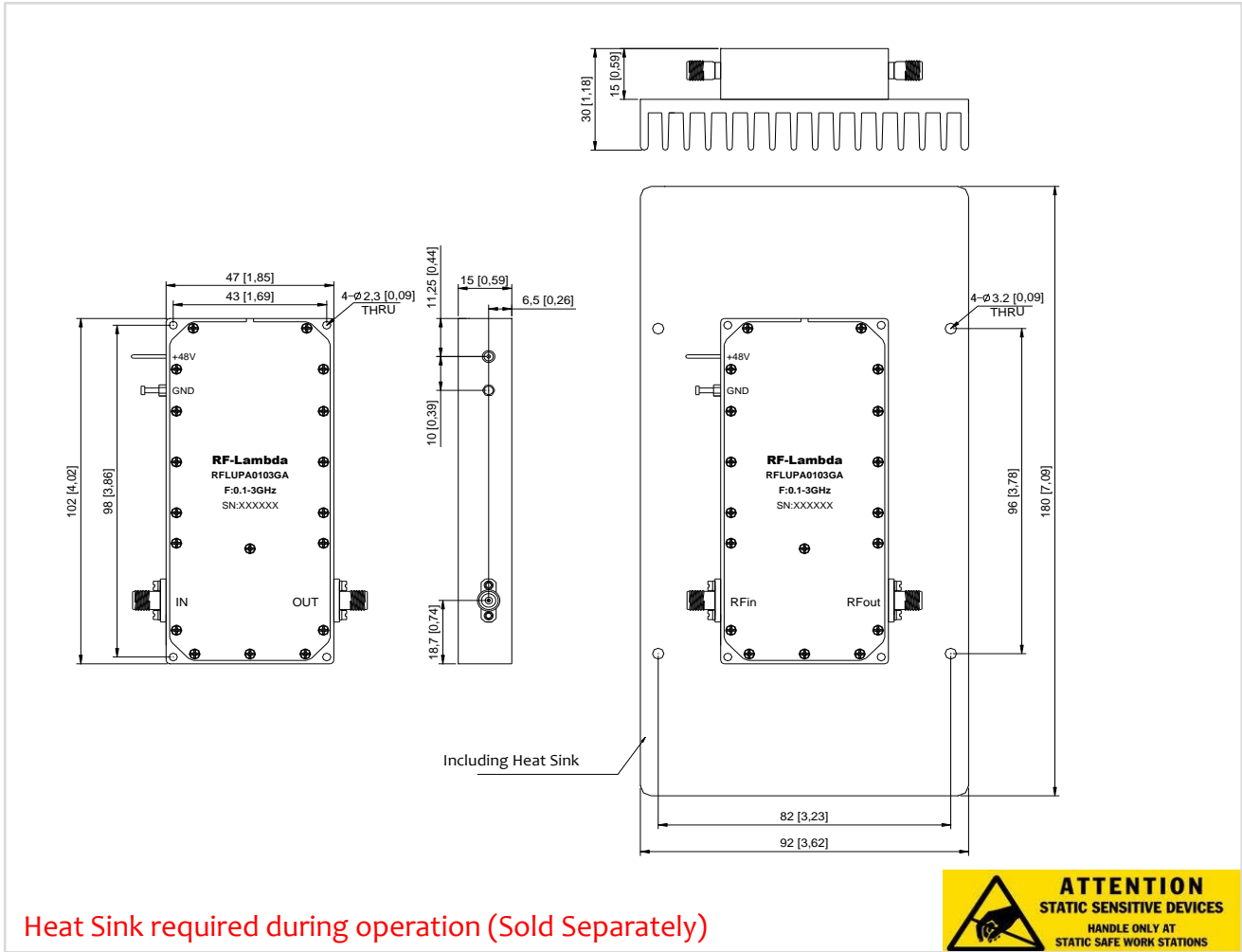


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Outline Drawing:

All Dimensions in mm[inches]



Heat Sink required during operation (Sold Separately)

Ordering Information

Part No.	ECCN	Description
RFLUPA0103GA	EAR99	0.1-3GHz Power Amplifier

Important Notice

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