



Low Noise Amplifier 1.3GHz~2.9GHz



Features

- Gain: 25 dB Typical
- Noise Figure: 1.2dB Typical
- P1dB Output Power: +20 dBm Typical
- Supply Voltage: +5V @ 150mA
- 50 Ohm Matched Input / Output
- Size: 0.98" x 0.98" x 0.394"

Typical Applications

- Telecom Infrastructure
- Microwave Radio & VSAT
- Military & Space
- Test Instrumentation
- Fiber Optics

Electrical Specifications, TA = +25 ° C, With Vdd = +5V, 50 Ohm System

Parameter	Min.	Typ.	Max.	Min.	Typ.	Max.	Units
Frequency Range	1.3		2.2	2.2		2.9	GHz
Gain	23	25		22	24		dB
Gain Flatness		±0.5	±1.0		±1.0	±1.5	dB
Gain Variation Over Temperature(-45 ~ +85)		±0.5			±0.5		dB
Noise Figure		1.2			1.3		dB
Input VSWR		1.5	2		1.8	2	
Output VSWR		1.8	2		1.8	2	
Output Power for 1 dB Compression (P1dB)	14	18		17	21		dBm
Saturated Output Power (Psat)		19			22		dBm
Output Third Order Intercept (IP3)		25			22		dBm
Supply Current (Idd)		150	210		150	210	mA
Isolation S12		-55			-45		dB
Input Max Power(no damage)	+15						dBm
Weight	1.76						ounces
Impedance	50						Ohms
Input /Output Connector	SMA-Female						
Finishing	Standard: Gold 40 micron; Nickel 220 micron thickness						
	Option: Gold 80 micron; Nickel 180 micron thickness						
Material	Aluminum/copper						
Package Sealing	Epoxy Sealing (Standard)						
	Hermetically Seal (Option with extra charge)						



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Absolute Maximum Ratings

Operating Voltage	+5.5V
RF Input Power(+5V)	+25dB m
Operating Temperature(°C)	-45 to +85
Storage Temperature(°C)	-65 to +150

Biasing Up Procedure

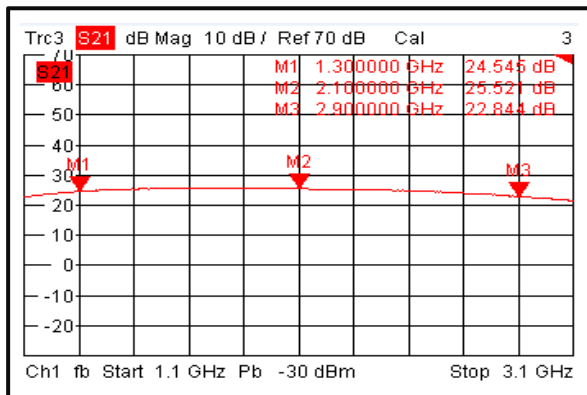
Step 1	Connect Ground Pin
Step 2	Connect input and output
Step 3	Connect +5V biasing
Power OFF Procedure	
Step 1	Turn off +5V biasing
Step 2	Remove RF connection
Step 3	Remove Ground.

Environment specifications

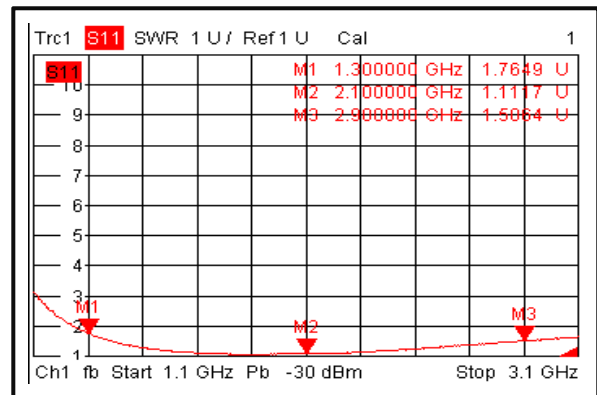
Operational Temperature (°C)	-45 to +85
Storage Temperature (°C)	-50 to +125
Altitude	30,000 ft. (Epoxy Seal Controlled environment) 60,000 ft 1.0psi min (Hermetically Seal Un-controlled environment) (Optional)
Vibration	25g rms (15 degree 2KHz) endurance, 1 hour per axis
Humidity	100% RH at 35c, 95%RH at 40°c
Shock	20G for 11msc half sin wave,3 axis both directions

Typical performance plots

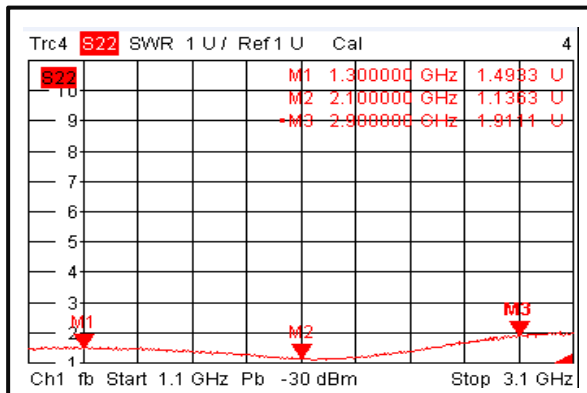
Gain



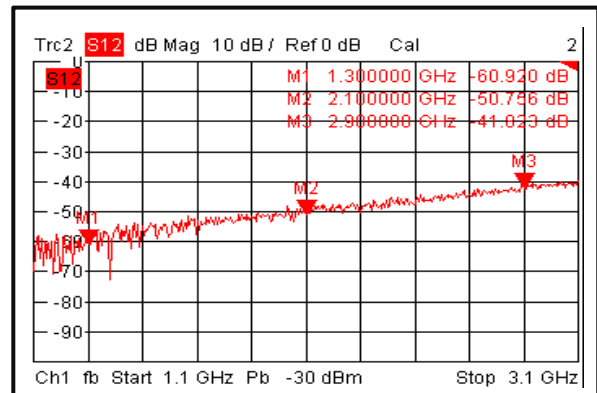
Input VSWR



Output VSWR



Isolation



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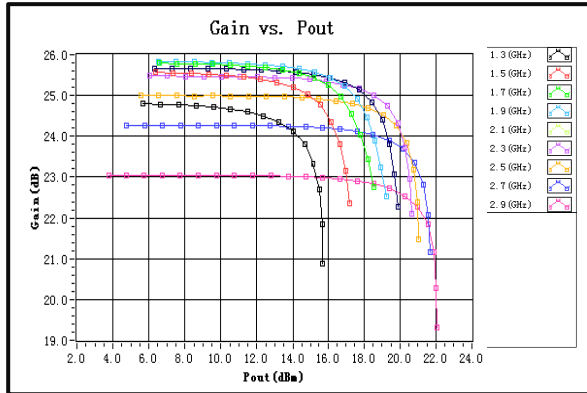


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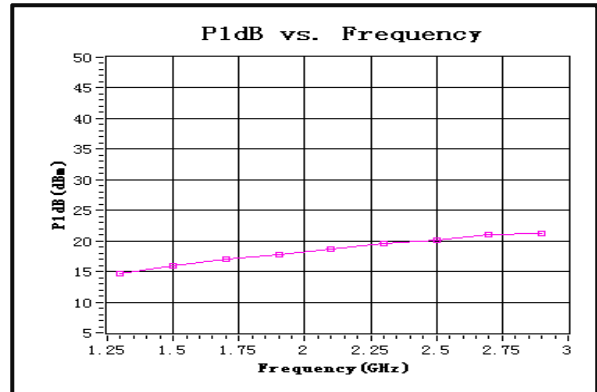
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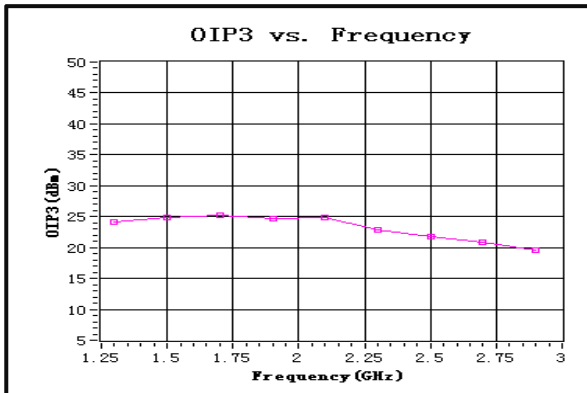
Gain vs. output power



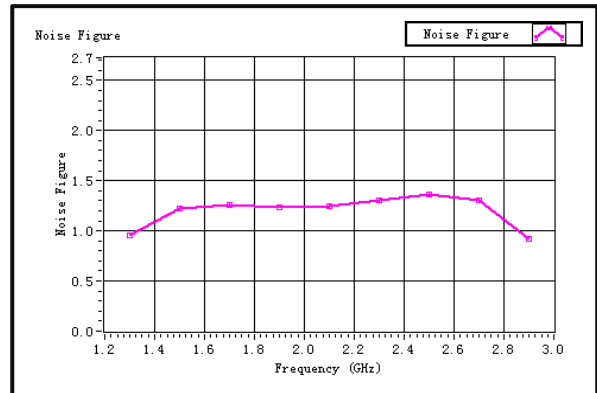
P1dB vs. Frequency



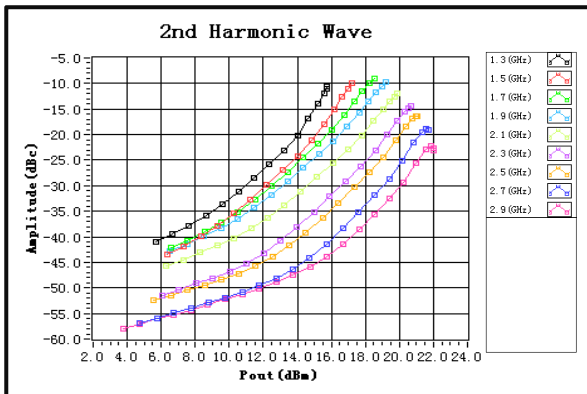
Output Third Order Intercept (IP3)



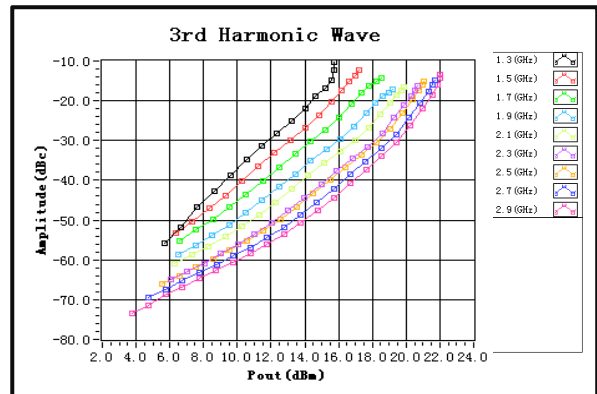
Noise Figure



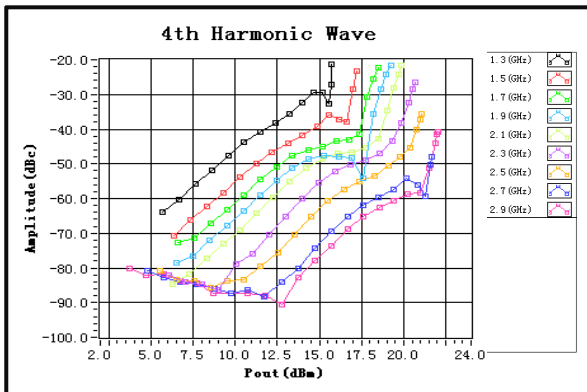
2nd Harmonic Wave output Power



3th Harmonic Wave output Power



4th Harmonic Wave output Power



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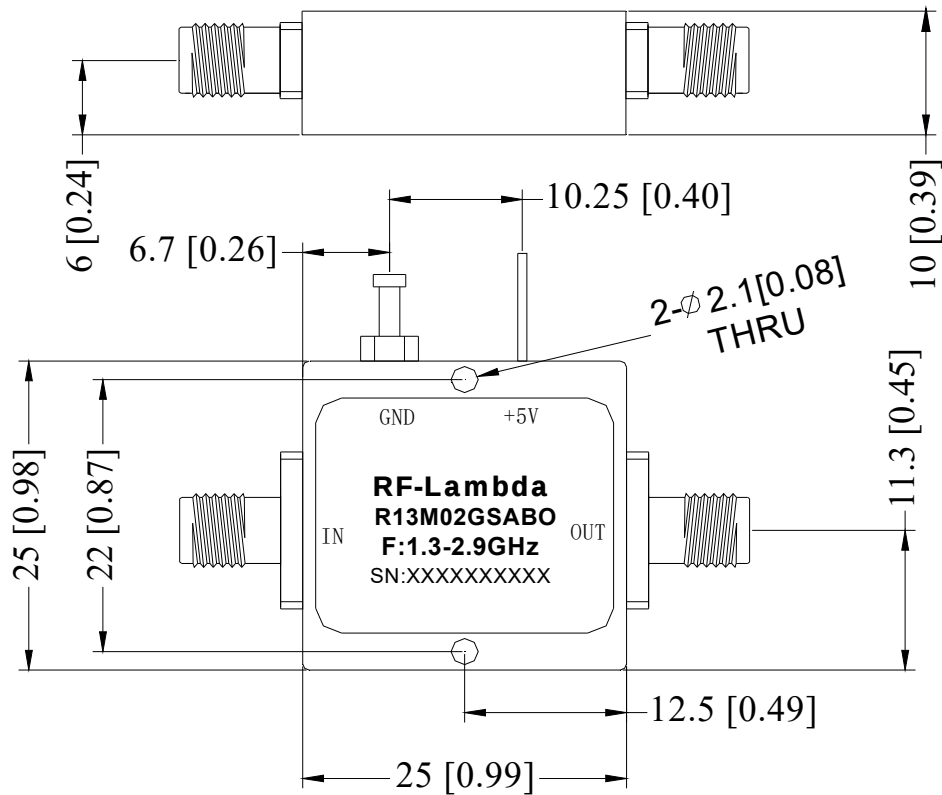
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Outline Drawing:

All Dimensions in mm (inches)

Heat Sink required during operation (Sold separately)



Ordering Information

Part No	ECCN	Description
R13M02GBO	EAR99	1.3-2.9GHz LNA Amplifier

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