

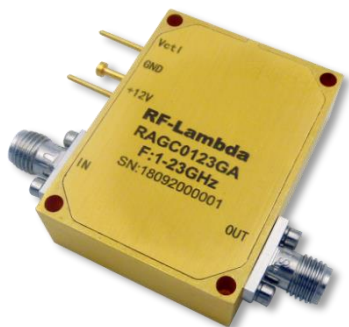


RF-LAMBDA

LEADER OF RF BROADBAND SOLUTIONS

RAGC0123GA

Wide Band Variable Gain Low Noise Amplifier 1GHz~23GHz



Features

- Gain: 33dB Typical
- Noise Figure: 3.0dB Typical
- Output P1dB : +20dBm Typical
- PSAT Output Power: 22dBm
- Supply Voltage: +12V

Typical Applications

- Wireless Infrastructure
- Military & Aerospace
- Test and Measurement

Electrical Specifications, TA = +25 °C, Vcc = +12V, Vctl= -1 to +2V

Parameter	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Units
Frequency Range	1		2	2		20	20		23	GHz
Gain	32	36		28	33		26	32		dB
Gain Adjustable Range		30			30			30		dB
Gain Flatness		±2.0			±2.0	±3.0		±1.0	±2.0	dB
Gain Variation Over Temperature (-45°C ~ +85°C)		±0.5			±1.0			±2.0		dB
Noise Figure		3.5	5.0		2.5	4.5		5.0		dB
Input VSWR		3.0			2.0	3.2		2.0	3.0	: 1
Output VSWR		2.5			1.8	2.8		2.0	2.5	: 1
Output 1dB Compression Point (P1dB)	20	22		18	20		15	17		dBm
Saturated Output Power (Psat)		23			22			19		dBm
Output Third Order Intercept (IP3)		30			28			26		dBm
Isolation S12		-75			-65			-60		dB
Supply Current (Vcc=+12V, Vctl=-1 to +2V)		180	350		180	350		180	350	mA
Weight	1.41									Ounces
Impedance	50									Ohms
Input / Output Connectors	SMA - Female									
Finish	Standard: Gold 40 micron; Nickel 220 micron thickness									
	Option: Gold 80 micron; Nickel 180 micron thickness									
Material	Aluminum									
Package Sealing	Epoxy Sealed (Standard)									
	Hermetically Sealed (Optional)									

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Absolute Maximum Ratings

Operating Voltage	+15V
Vg Control Voltage	-2V to +3V
RF Input Power	+40dBm

Biasing Up Procedure

Step 1	Connect Ground Pin
Step 2	Connect input and output
Step 3	Connect +12V biasing
Step 4	Connect Vctl Control
Step 5	Turn on +12V biasing
Step 6	Turn on Vctl Control
Power OFF Procedure	
Step 1	Turn off Vctl Control
Step 2	Turn off +12V biasing
Step 3	Remove RF connection
Step 4	Remove Ground.

Environmental Specifications and Test Standards

Parameter	Standard	Description
Operational Temperature	MIL-STD-39016	-45°C~+85°C
Storage Temperature		-50°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	MIL-STD-883	Standard: 30,000 Ft (Epoxy Sealed Controlled Environment) Optional: Hermetically Sealed (60,000 ft. 1.0 PSI min)
Hermetically Sealed (Optional)		MIL-STD-883 (For Hermetically Sealed Units)

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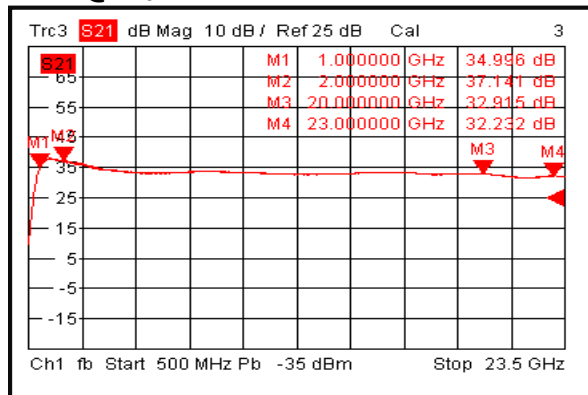
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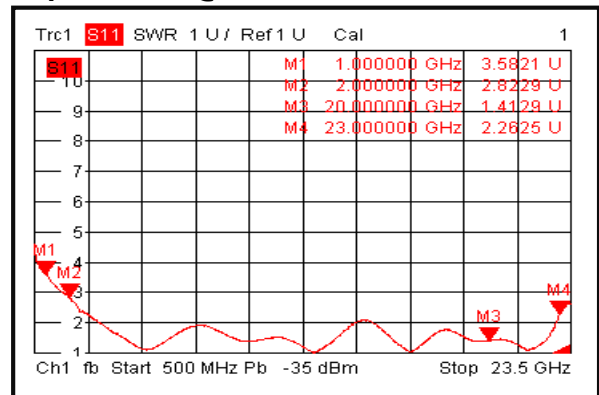
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Typical Performance Plots

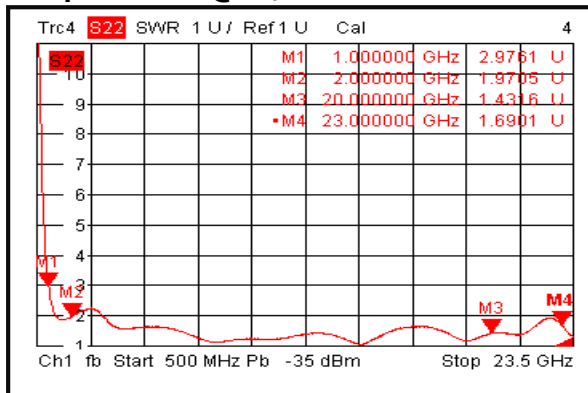
Gain @+25°C



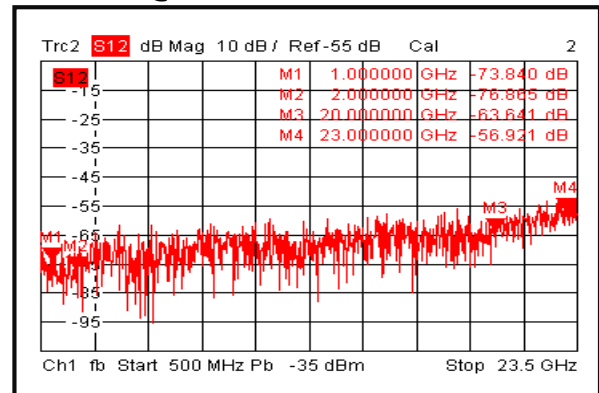
Input VSWR @+25°C



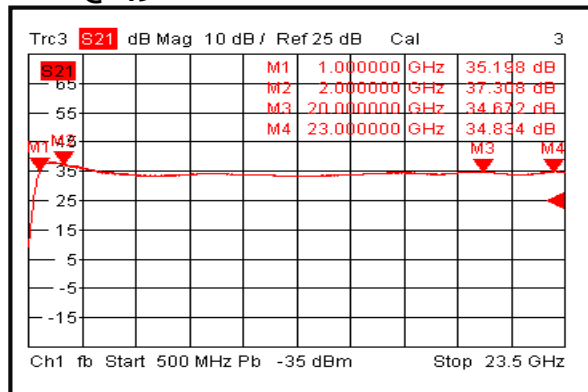
Output VSWR @+25°C



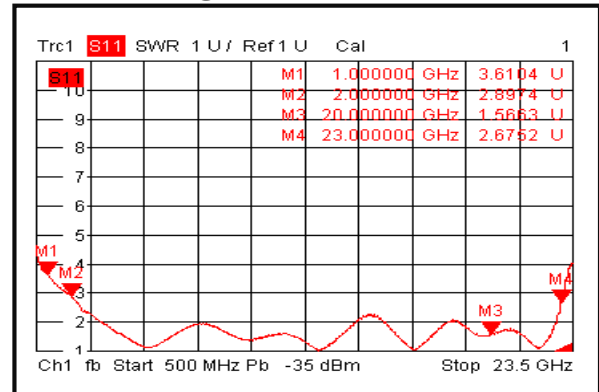
Isolation @+25°C



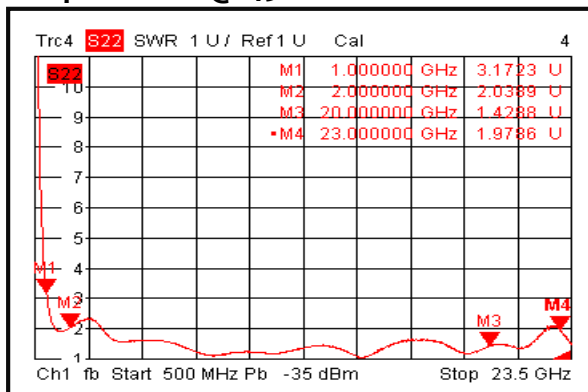
Gain @-45°C



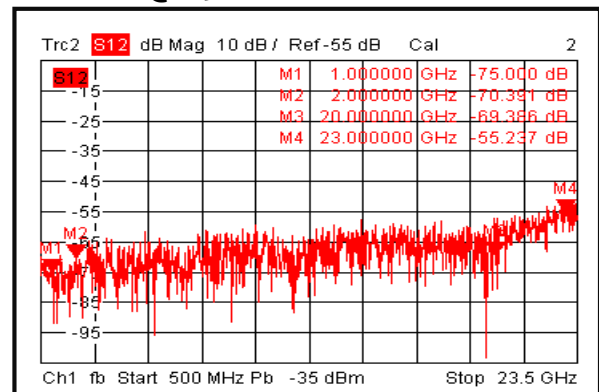
Input VSWR @-45°C



Output VSWR @-45°C



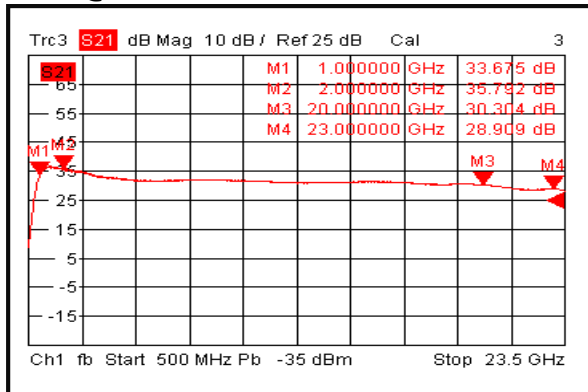
Isolation @-45°C



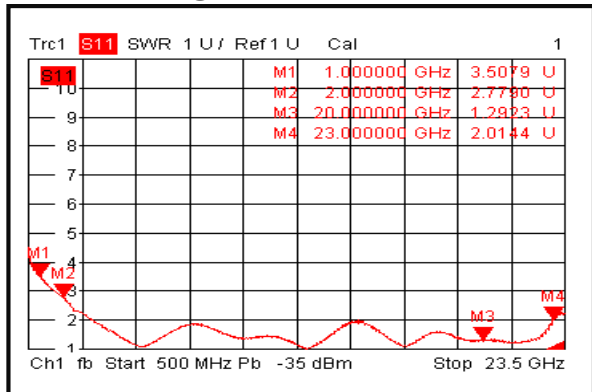
Wide Band Variable Gain Low Noise Amplifier 1GHz~23GHz



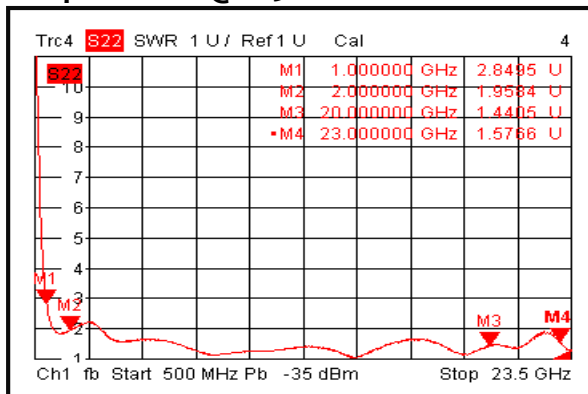
Gain @+85°C



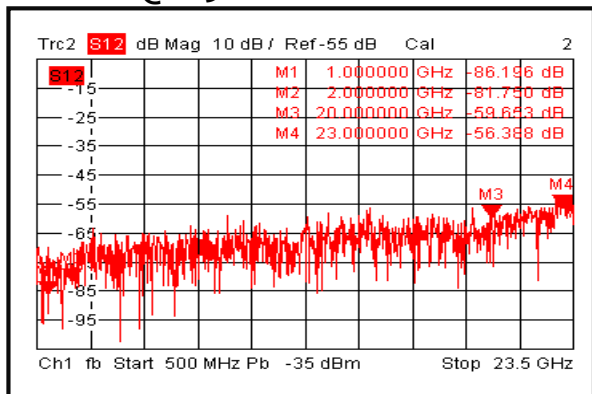
Input VSWR @+85°C



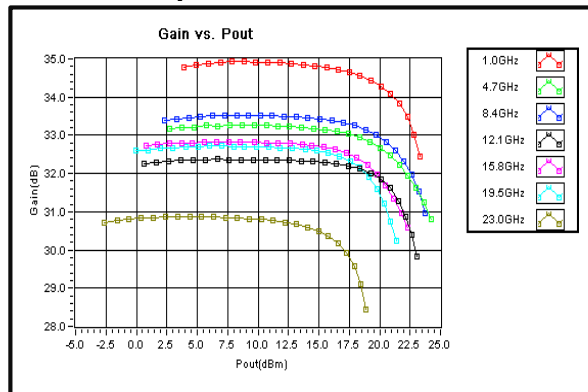
Output VSWR @+85°C



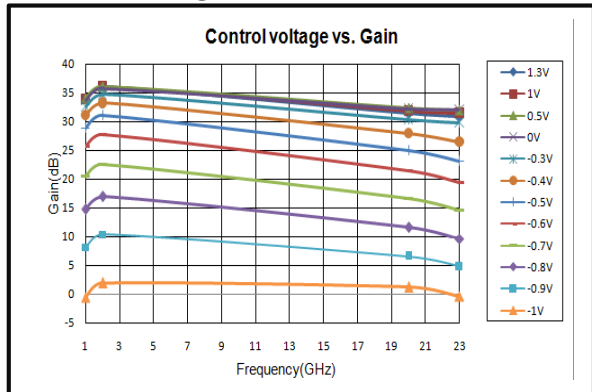
Isolation @+85°C



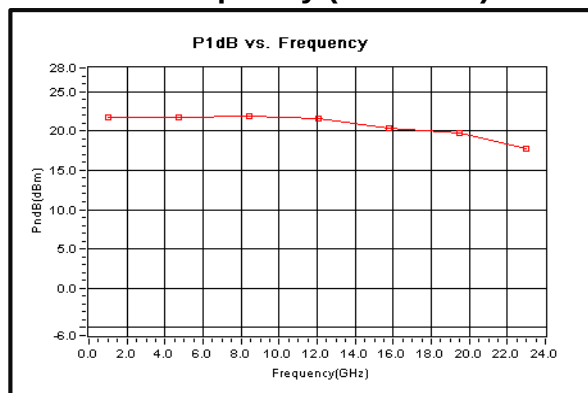
Gain vs. Output Power



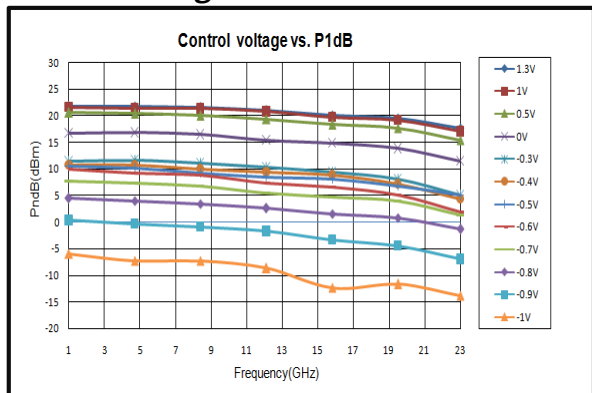
Control Voltage vs. Gain



P1dB vs. Frequency (Max Gain)

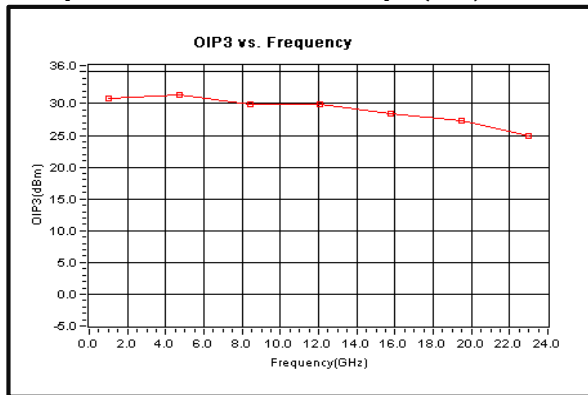


Control Voltage vs. P1dB

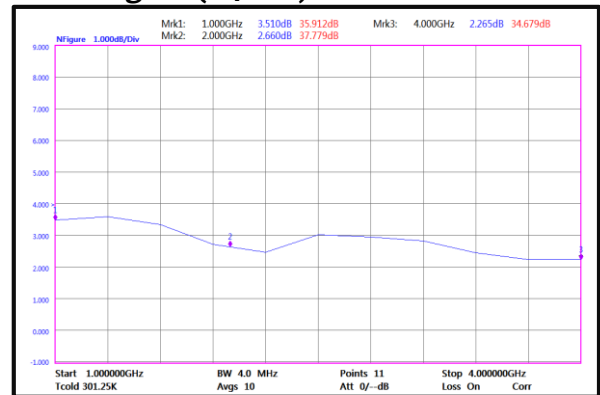




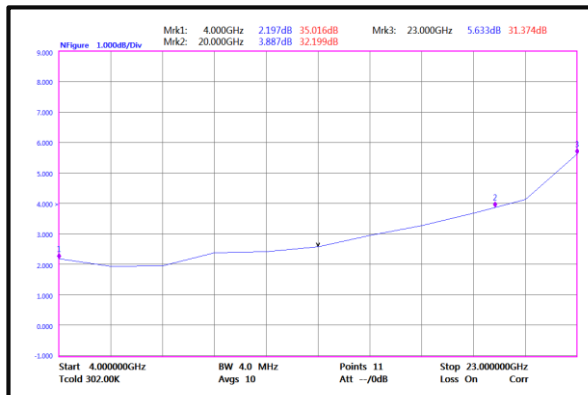
Output Third Order Intercept (IP₃)



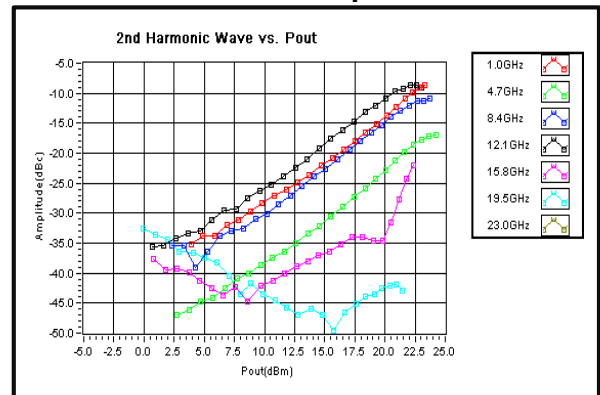
Noise Figure (1-4GHz)



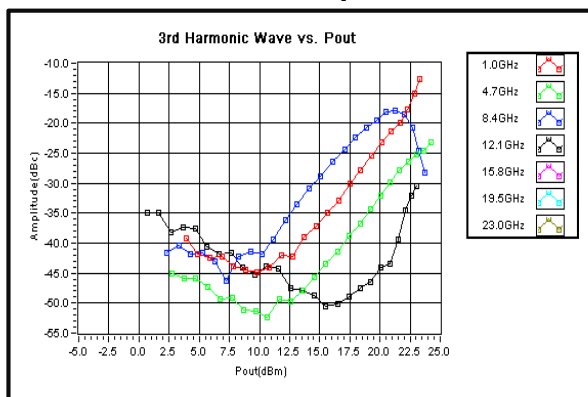
Noise Figure (4-23GHz)



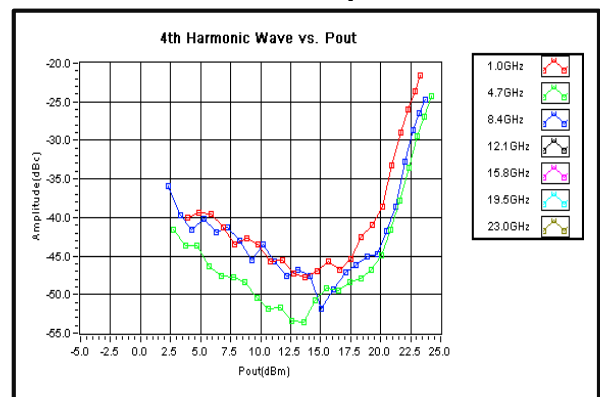
2nd Harmonic Wave Output Power



3rd Harmonic Wave Output Power



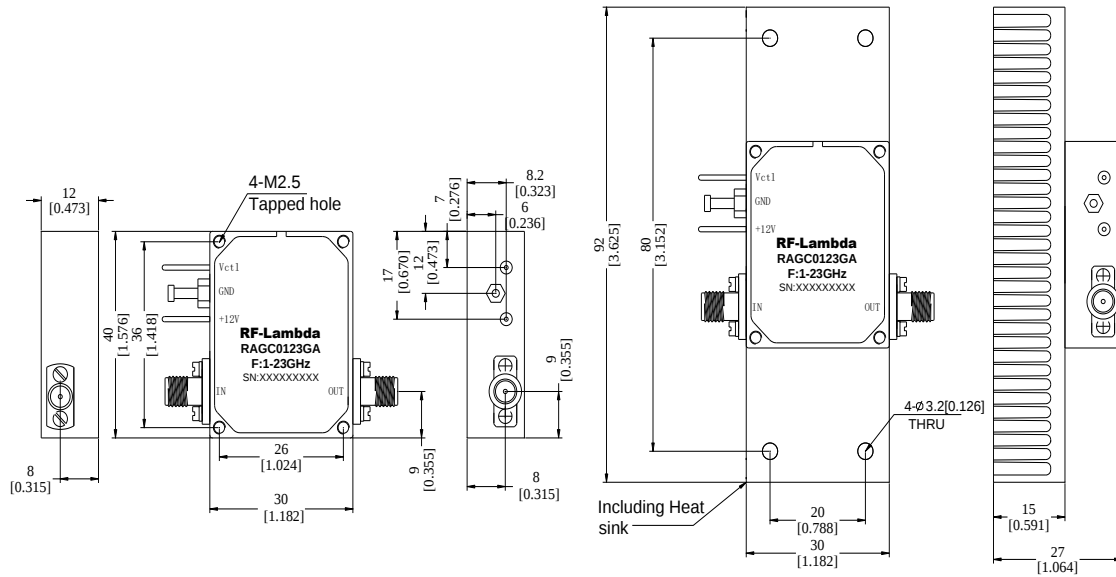
4th Harmonic Wave Output Power





Outline Drawing:

All Dimensions in mm [inches]



Heat Sink required during operation (Sold Separately)



Ordering Information

Part No.	ECCN	Description
RAGC0123GA	EAR99	1-23GHz Wide Band Variable Gain Low Noise Amplifier

Important Notice

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