

## Wide Band Variable Gain Low Noise Amplifier 0.01GHz~3GHz



### Features

- Gain: 45dB Typical
- Noise Figure: 3.0dB Typical
- Output P1dB : +18dBm Typical
- Supply Voltage: +12V

### Typical Applications

- Wireless Infrastructure
- Military & Aerospace
- Test and Measurement

Electrical Specifications,  $T_A = +25\text{ }^\circ\text{C}$ ,  $V_{CC} = +12\text{V}$ ,  $V_{ctl} = +0.2\text{V to } +1.4\text{V}$

Parameter	Min.	Typ.	Max.	Min.	Typ.	Max.	Units
Frequency Range	0.01		0.1	0.1		3	GHz
Gain (Max Setting)	40	54		42	54		dB
Gain Adjustable Range		53			53		dB
Gain Flatness		$\pm 2.0$			$\pm 5.0$		dB
Gain Variation Over Temperature (-40°C ~ +85°C)		$\pm 1.0$			$\pm 1.0$		dB
Noise Figure		3.0			1.5	2.5	dB
Input VSWR		2.0			1.8	2.2	: 1
Output VSWR		2.0			2.0	2.8	: 1
Output 1dB Compression Point (P1dB)	16	18		6	18		dBm
Saturated Output Power (Psat)		22			22		dBm
Output Third Order Intercept (OIP3)		28			30		dBm
Isolation S12		-60			-60		dB
Supply Current ( $V_{CC}=+12\text{V}$ , $V_{ctl} = +0.2\text{V to } +1.4\text{V}$ )		450	500		450	500	mA
Weight	2.3 Max.						Ounces
Impedance	50						Ohms
Input / Output Connectors	SMA- Female						
Finish	Nickel Plated						
Material	Aluminum						
Package Sealing	Epoxy Sealed (Standard)						
	Hermetically Sealed (Optional)						

**Absolute Maximum Ratings**

Operating Voltage	+15V
Vg Control Voltage	0V to +2.2V
RF Input Power (@25°C, 50Ω)	-25dBm

**Biasing Up Procedure**

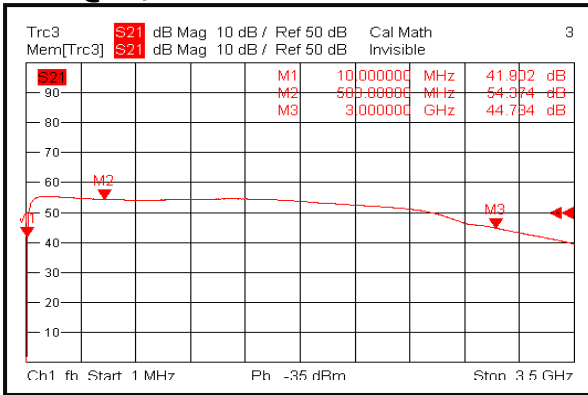
Step 1	Connect Ground Pin
Step 2	Connect input and output
Step 3	Connect +12V biasing
Step 4	Connect Vctl Control
Step 5	Turn on +12V biasing
Step 6	Turn on Vctl Control
Power OFF Procedure	
Step 1	Turn off Vctl Control
Step 2	Turn off +12V biasing
Step 3	Remove RF connection
Step 4	Remove Ground.

**Environmental Specifications and Test Standards**

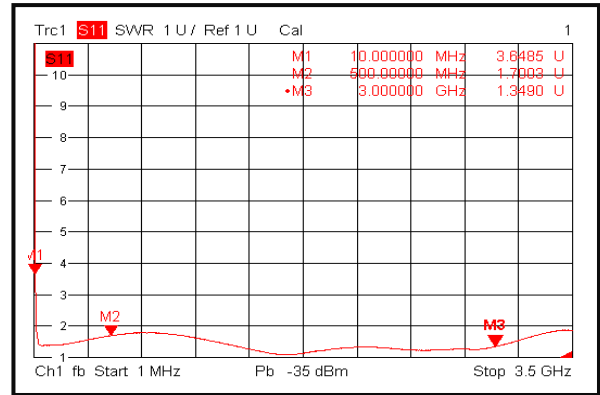
Parameter	Description
Operational Temperature	-40°C~+85°C (Case Temperature)
Storage Temperature	-50°C~+105°C
Thermal Shock	-40°C → +85°C (5 Cycles / 10 hours)
Random Vibration	MIL-STD-202G Table 214-I, Test Condition Letter C 1.5 Hours Per Axis
High Temperature Burn In	Temperature +85°C for 72 Hours
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 (For Hermetically Sealed Units)

## Typical Performance Plots

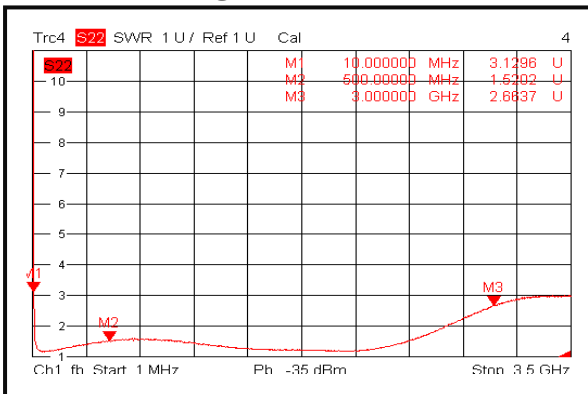
### Gain @+25°C



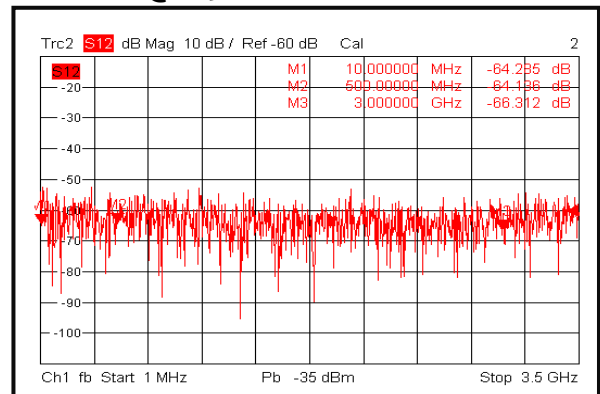
### Input VSWR @+25°C



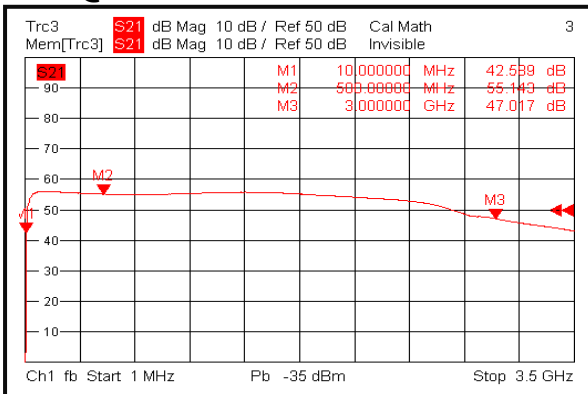
### Output VSWR @+25°C



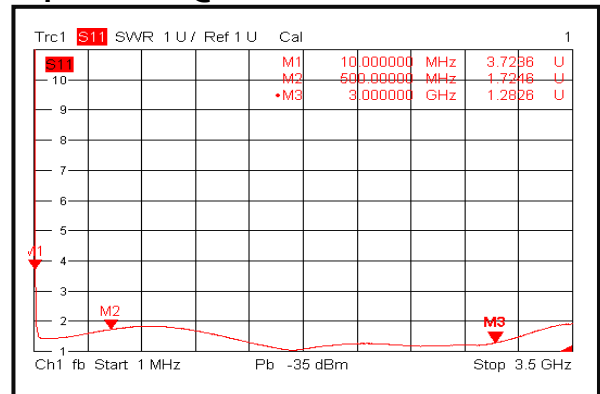
### Isolation @+25°C



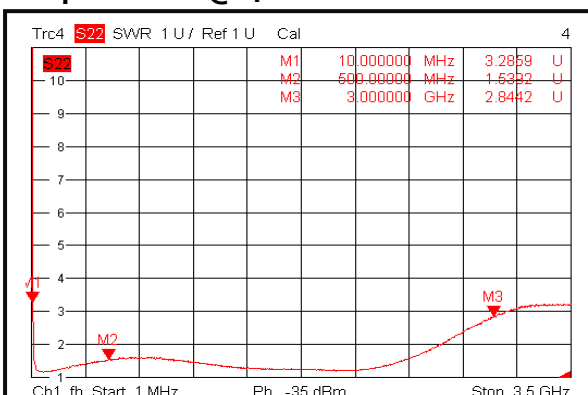
### Gain @-40°C



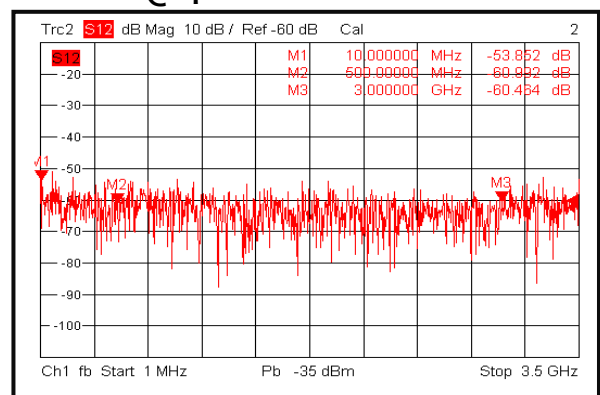
### Input VSWR @-40°C



### Output VSWR @-40°C

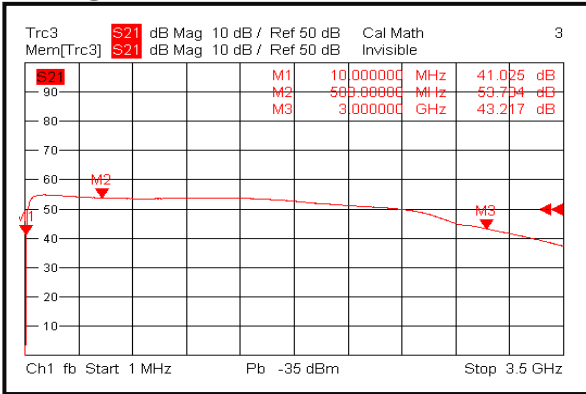


### Isolation @-40°C

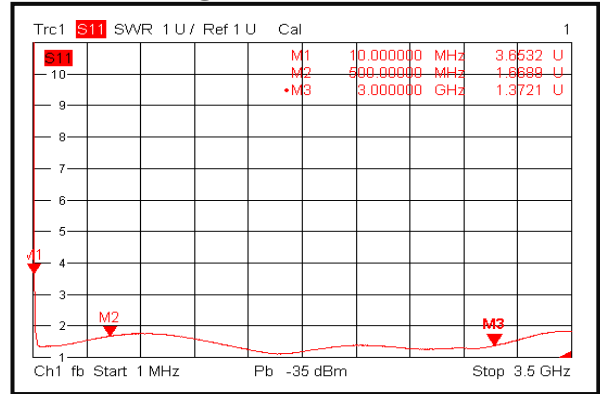


Wide Band Variable Gain Low Noise Amplifier 0.01GHz~3GHz

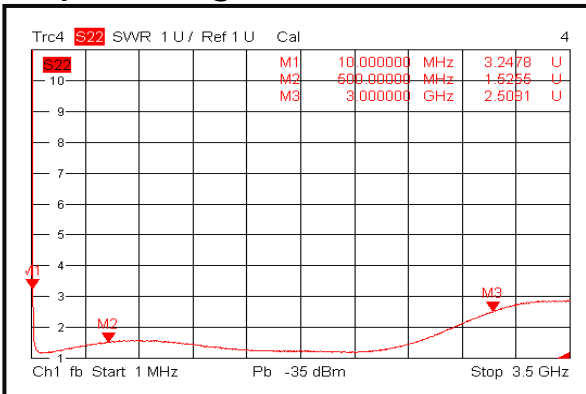
**Gain @+85°C**



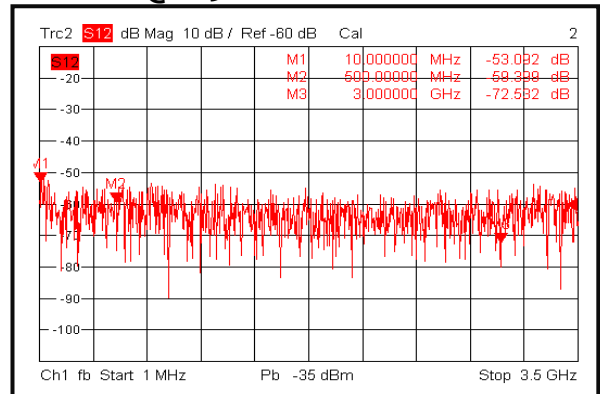
**Input VSWR @+85°C**



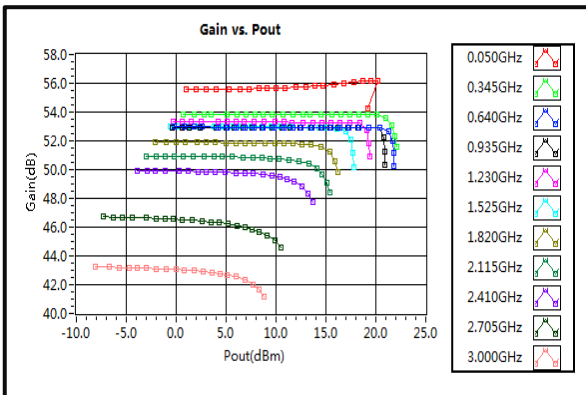
**Output VSWR @+85°C**



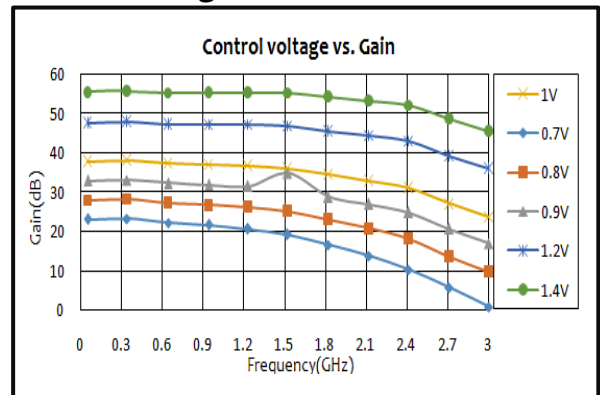
**Isolation @+85°C**



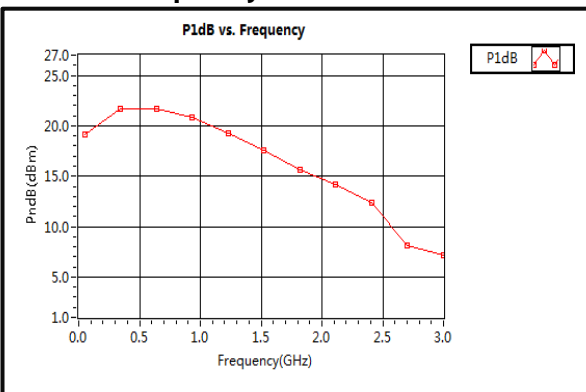
**Gain vs. Output Power**



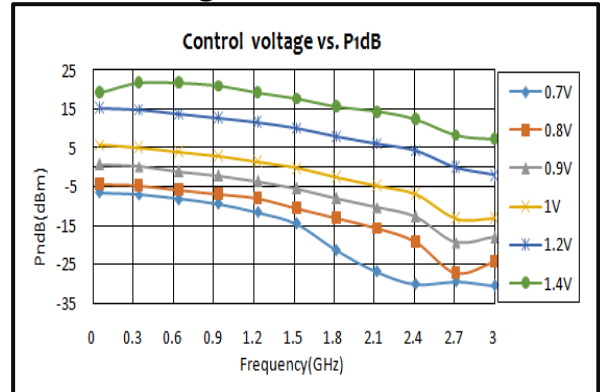
**Control Voltage vs. Gain**



**P1dB vs. Frequency**

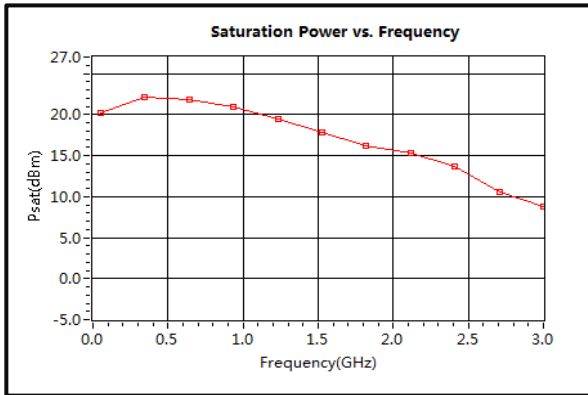


**Control Voltage vs. P1dB**

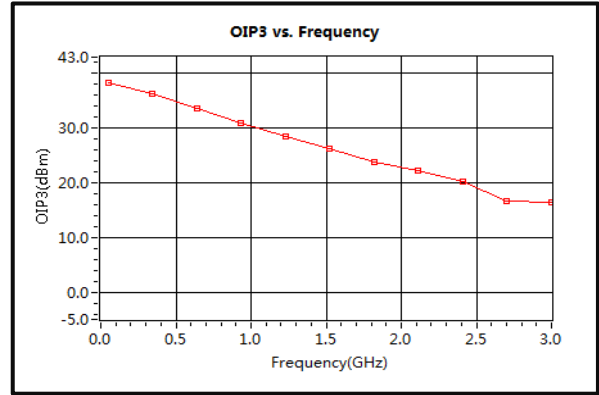


**Wide Band Variable Gain Low Noise Amplifier 0.01GHz~3GHz**

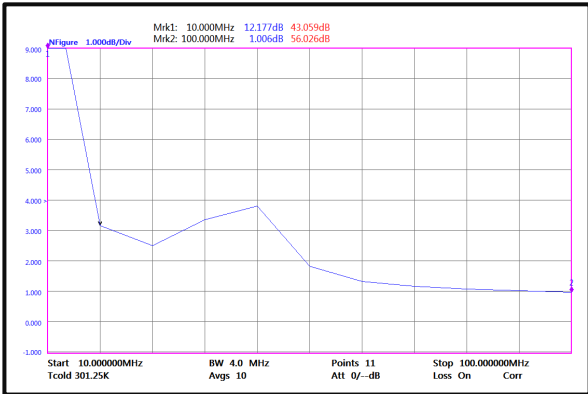
**Saturation Power vs. Frequency**



**Output Third Order Intercept (OIP3)**



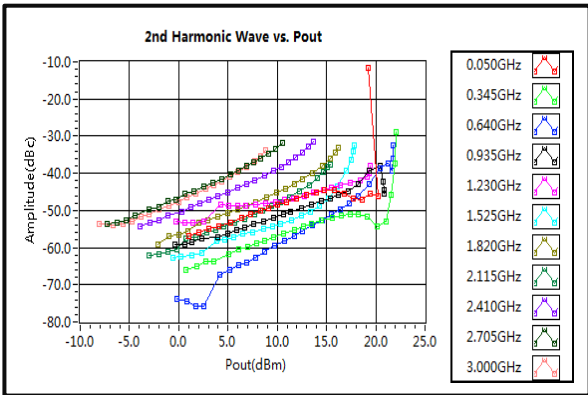
**Noise Figure (10-100MHz)**



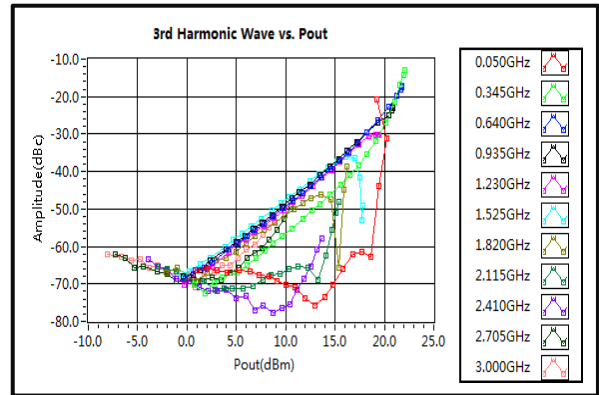
**Noise Figure (0.1-3GHz)**



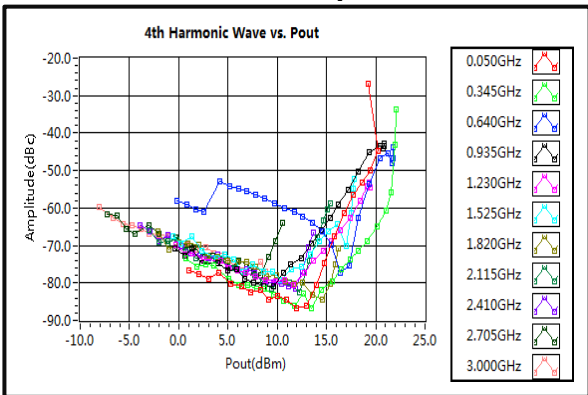
**2nd Harmonic Wave Output Power**



**3rd Harmonic Wave Output Power**



**4th Harmonic Wave Output Power**

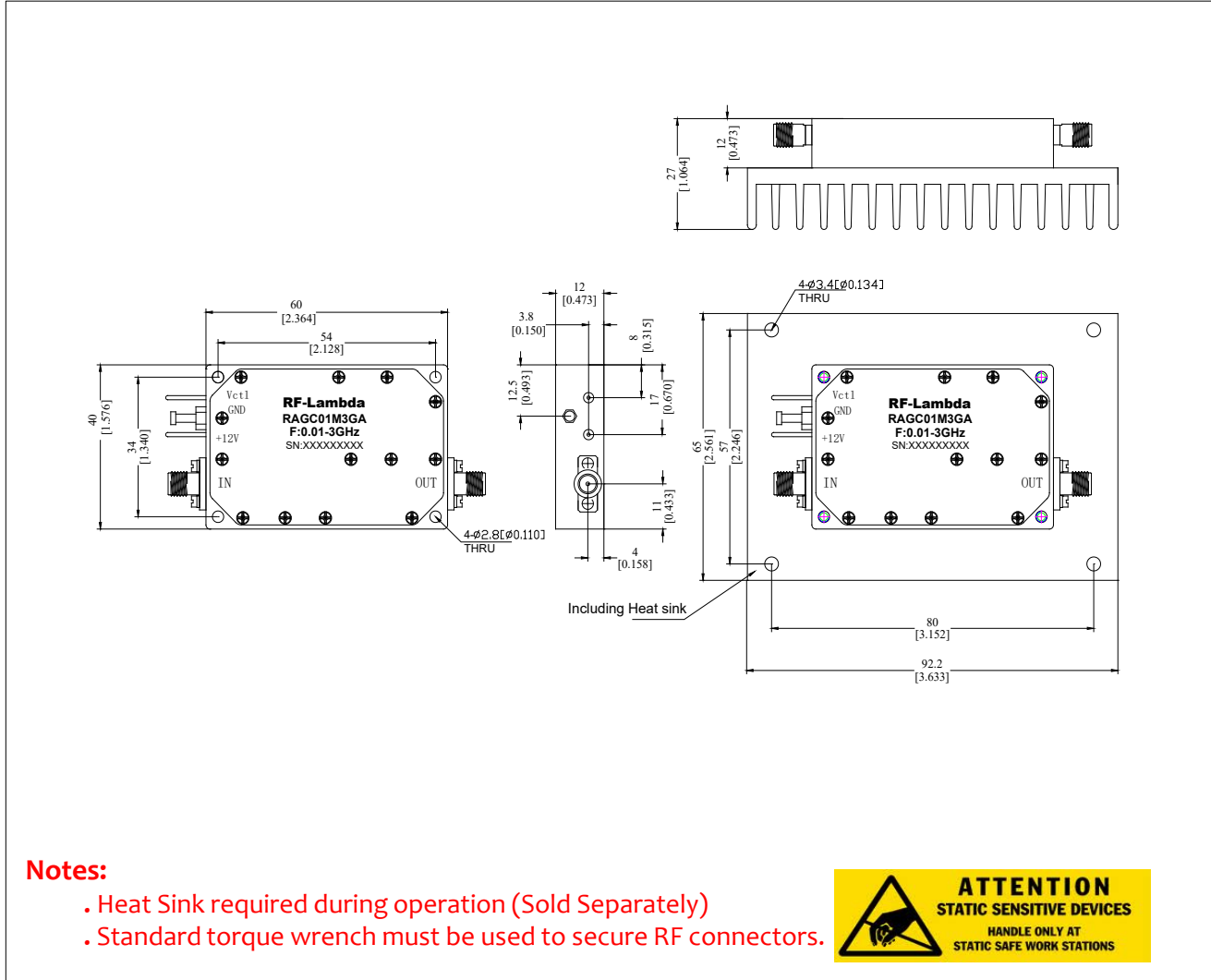


**Wide Band Variable Gain Low Noise Amplifier 0.01GHz~3GHz**

**Outline Drawing:**

All Dimensions in mm [inches]

Housing Tolerances  $\pm 0.2$  [0.008]



**Ordering Information**

Part No.	Description
RAGC01M3GA	0.01-3GHz Wide Band Variable Gain Low Noise Amplifier

**Important Notice**

The information contained herein is believed to be reliable. RF-Lambda makes no warranties regarding the information contained herein. RF-Lambda assumes no responsibility or liability whatsoever for any of the information contained herein. RF-Lambda assumes no responsibility or liability whatsoever for the use of the information contained herein. The information contained herein is provided "AS IS, WHERE IS" and with all faults, and the entire risk associated with such information is entirely with the user. All information contained herein is subject to change without notice. Customers should obtain and verify the latest relevant information before placing orders for RF-Lambda products. The information contained herein or any use of such information does not grant, explicitly or implicitly, to any party any patent rights, licenses, or any other intellectual property rights, whether with regard to such information itself or anything described by such information. RF-Lambda products are not warranted or authorized for use as critical components in medical, life-saving, or life sustaining applications, or other applications where a failure would reasonably be expected to cause severe personal injury or death.