

Ultra Wide Band AC Power Amplifier 0.7GHz-6GHz



Product Description

RAMP0706G16A is an ultra wide band AC Power amplifier with a frequency range of 0.7 to 6GHz.

The power output of this amplifier is 42 dBm typical. The typical gain is 46 dB with a gain flatness of ± 2.5 dB.

The AC power amplifier uses a standard convenient 110V/220 VAC power supply.

The fan and heatsink are all completely integrated inside the unit.

Features

- Ultra Wide band AC Power Amplifier
- Small Signal Gain 46dB Typical
- Output Saturation Power 42dBm Typical
- Supply Voltage 110/220 VAC
- 50 Ohm Matched Input / Output

Typical Applications

- Wireless Infrastructure
- Military and Aerospace Applications
- Test Instrumentation
- Radar Systems
- 5G Wireless Communications
- Microwave Radio Systems
- TR Modules
- Research and Development
- Cellular Base Stations

Electrical Specifications ($T_A = +25^\circ\text{C}$)

Parameter	Min	Typ	Max	Min	Typ	Max	Units
Frequency Range	0.7		3	3		6	GHz
Gain	42	46		42	46		dB
Gain Flatness		± 2.5			± 2.5		dB
Gain Variation Over Temperature ($-40^\circ\text{C} \sim +70^\circ\text{C}$)		± 2.0			± 2.0		dB
Input VSWR		1.6			1.6		dB
Output Power for 1 dB Compression (P1dB)	39	40		38.5	39.5		dBm
Saturated Output Power (Psat)		42			42		dBm
IM3		25			25		dBc
Supply Current (220V)		160			160		mA
Efficiency at Psat		30			25		%
Isolation S12		-65			-65		dB
Weight			11.0 Max.				lbs.
Impedance			50				Ohms
Input / Output Connectors			SMA- Female(Input) – SMA-Female(Output)				
Package			Epoxy Sealed (Standard)				
			Hermetically Sealed (Optional)				

Absolute Maximum Ratings

Parameter	Rating
Supply Voltage Range	110~240 VAC
*RF Input Power (RFIN)	+5dBm

Bias Up Procedure

1. Connect input and output with 50 Ohm source/load.
(In band VSWR < 1.9:1 or >10dB return loss.)

2. Connect Power Cable

3. Turn On Back Panel AC Power Supply Switch

4. Press Front Panel Power Switch to Power Display

Bias Down Procedure

1. Press Front Panel Power Switch to Power Off Display

2. Turn Off Back Panel AC Power Supply Switch

3. Remove Power Cable (If Moving Equipment)

4. Disconnect input and output with 50 Ohm source/load. (In band VSWR < 1.9:1 or >10dB return loss.)

Environmental Specifications and Test Standards

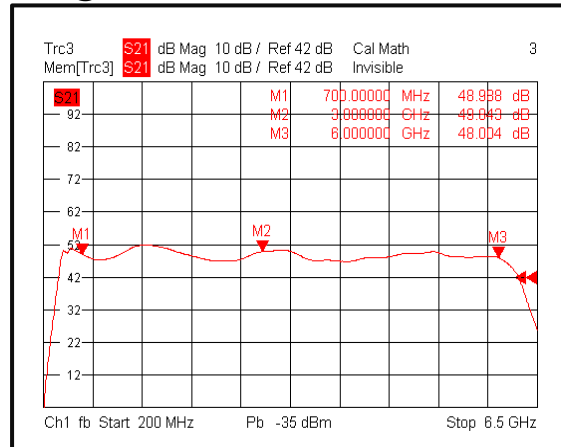
Parameter	Description
Operational Temperature	-40°C to +70°C (Case Temperature)
Storage Temperature	-50°C to +105°C
Thermal Shock	-40°C → +85°C (5 Cycles / 10 hours)
**Random Vibration	MIL-STD-202G Table 214-I, Test Condition Letter C 1.5 Hours Per Axis
High Temperature Burn In	Temperature +70°C for 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)

*Maximum RF input power is set to assure safety of amplifier. Input power may be increased at own risk to achieve full power of amplifier. Please reference gain and power curves.

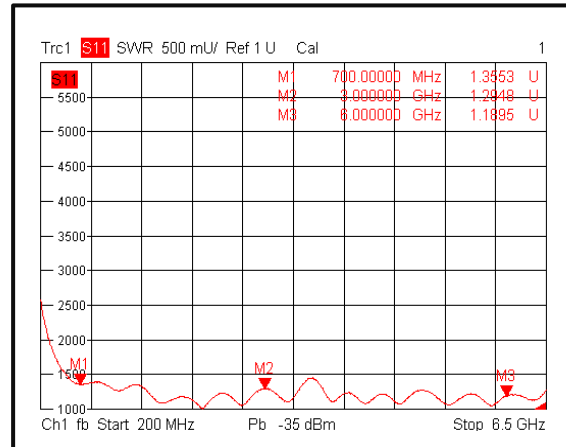
**For vibration testing details please see additional information section.

Typical Performance Plots

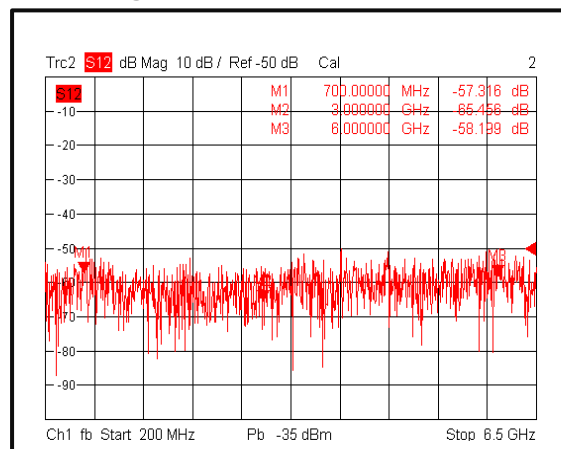
Gain@+25°C



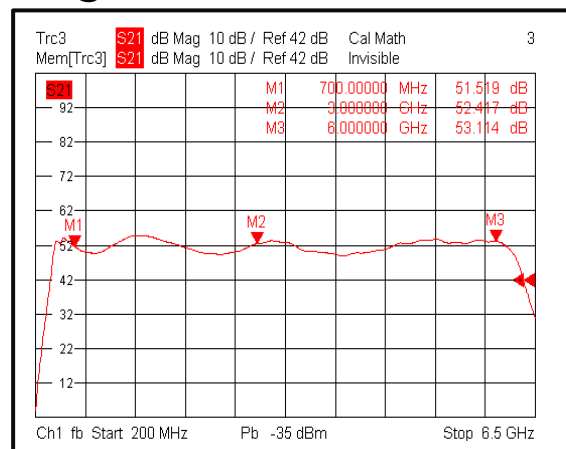
Input VSWR@+25°C



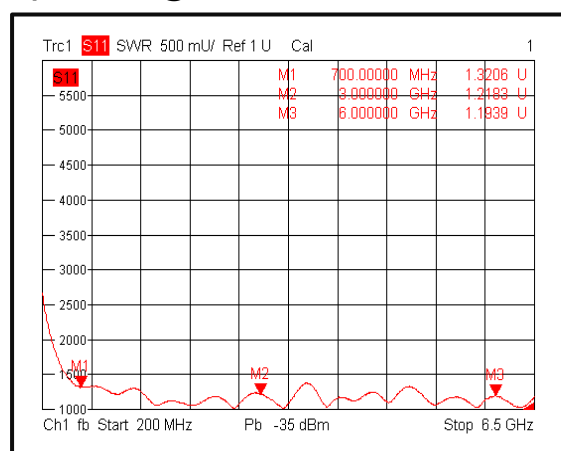
Isolation@+25°C



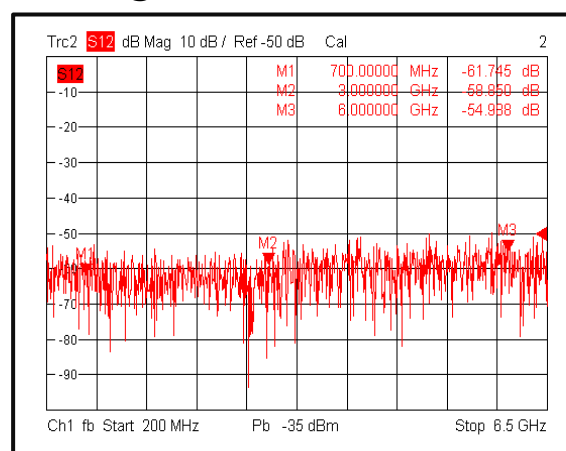
Gain@-40°C



Input VSWR@-40°C



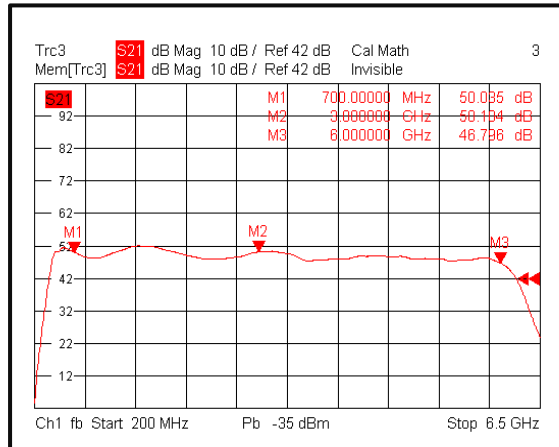
Isolation@-40°C



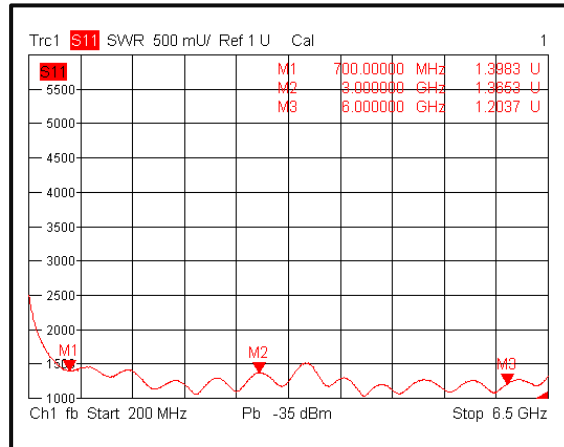
Note: Small signal VNA measurements include attenuators to protect equipment

Typical Performance Plots

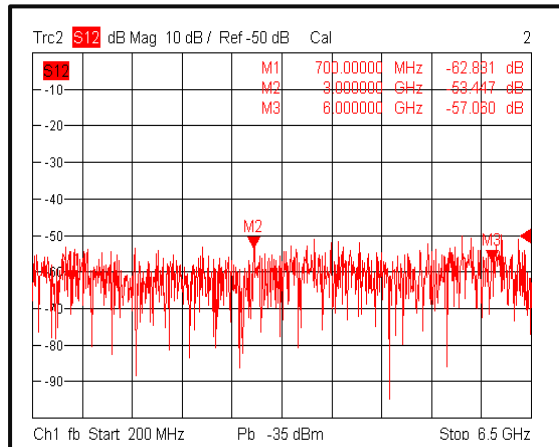
Gain@+70°C



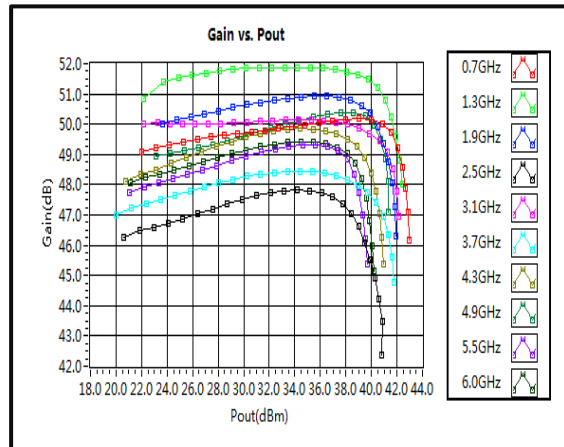
Input VSWR@+70°C



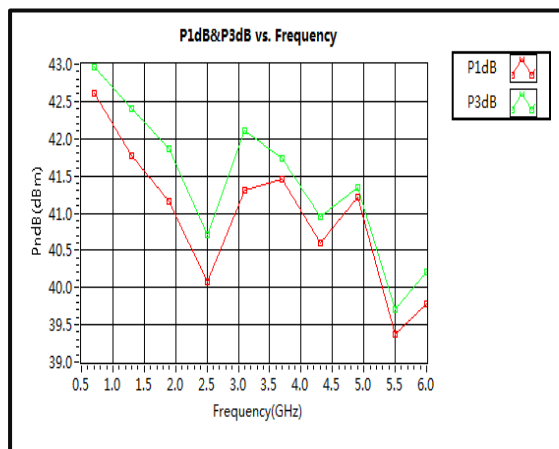
Isolation@+70°C



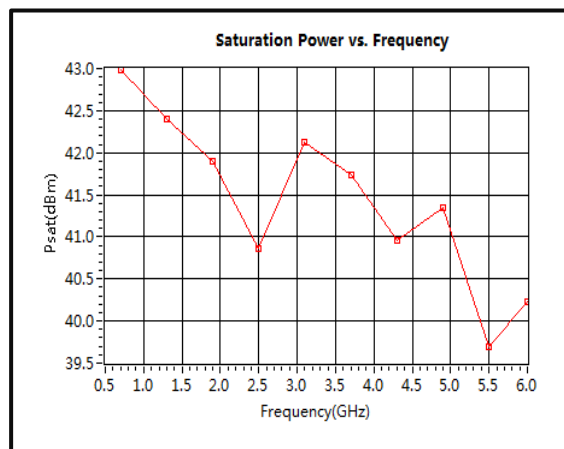
Gain vs. Output Power



P1dB & P3dB vs. Frequency



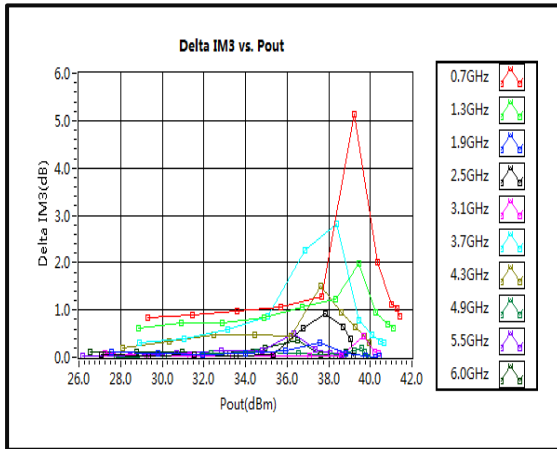
Saturated Power vs. Frequency



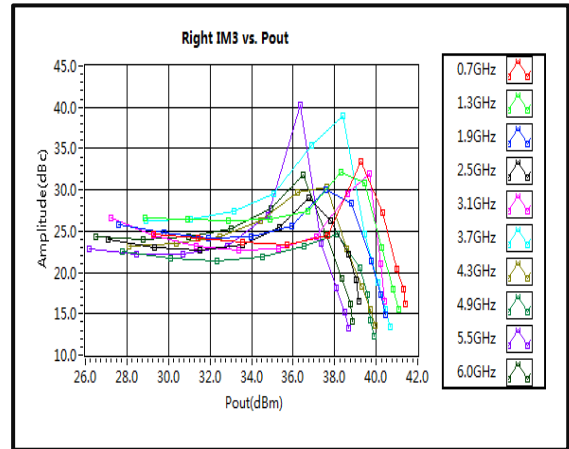
Note: Small signal VNA measurements include attenuators to protect equipment

Typical Performance Plots

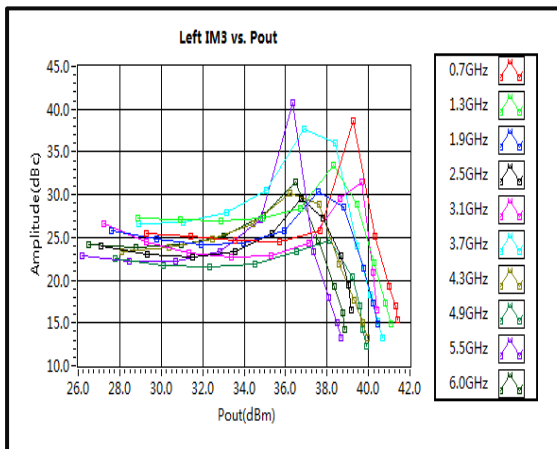
Delta IM3 vs. Pout



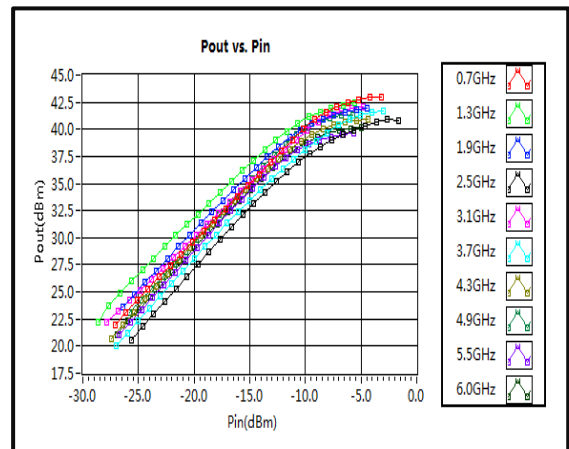
Right IM3 vs. Pout



Left IM3 vs. Pout

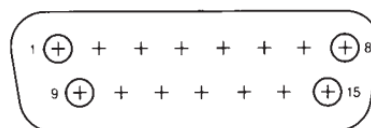


Pout vs. Pin



Protection Connector Table

Male D-Sub is on the housing
The mating female part number: 172-E15-203R001

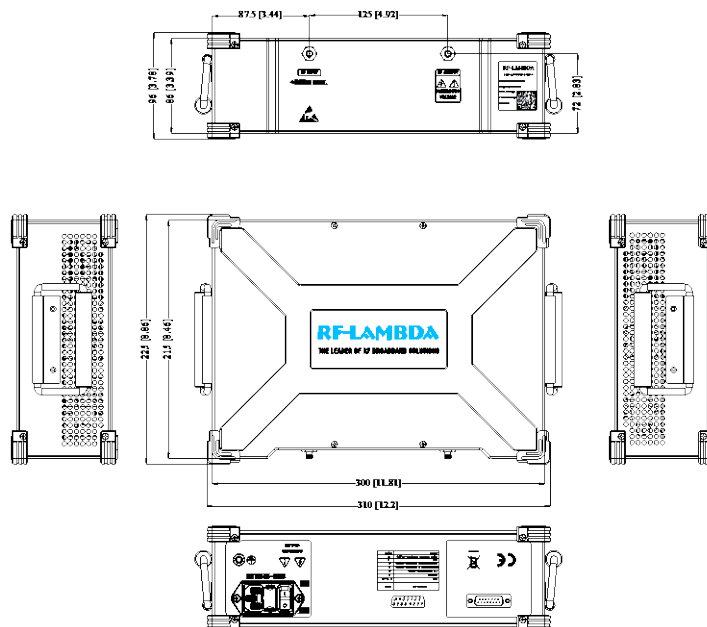


Pin #	Name	Function	Initial State	Description	Applied
1,9,10,11 ,12,13	--	--	--		NC
3	Reset	Control	HIGH	Resets PA when logic LOW is applied and released	Yes
4	PA-Enable	Control	HIGH	Applying logic LOW disables drains of amplifiers	Yes
5	Over Current	Indicator	LOW	Pin will be latched to logic HIGH when drain current limit is reached	Yes
6	Over Temp	Indicator	LOW	Pin will be latched to logic HIGH when amplifier is driven over temperature	Yes
7	VSWR	Indicator	LOW	Pin will be latched to logic HIGH when output reflection is over limit	No
8	RF Input Over Drive	Indicator	LOW	Pin will be latched to logic HIGH when input signal is over limit	Yes
14,15	GND	Ground	GND	Ground	Yes

Notes:

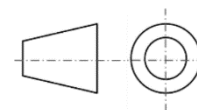
- HIGH/LOW voltages are standard TTL signals 0.0V-0.8V = LOW. 2.8V-5V = HIGH. Input current is 10uA.
- Matching connector and cable will be shipped with the product.
- Applied=Yes means the feature is included. Applied=No means the feature is not included with this model.
- 5V reference supply can source 700mA.
- Indicator output signals can source 24mA.

Outline Drawing



Notes:

1. Package Material: Aluminum
2. Finish: Black Paint
3. All dimensions are in millimeters [inches].
4. Housing Tolerances ± 1.5 [0.059] unless otherwise specified.
5. Heat sink required during operation (sold separately). Matching heatsink is listed on our website. If customer would like to use their own cooling method, please make sure the amplifier will operate under the specs that listed in page 2 of this datasheet.
6. Standard torque wrench must be used to secure RF connectors.



Additional Information

Documentation	Webpage
ESD Policy	https://rflambda.com/pdf/rflambda_esd_control.pdf
Heatsink Lookup Specifications	https://rflambda.com/search_heatsink.jsp
Connector Torque Specifications	https://www.rflambda.com/pdf/Torque_Specifications.pdf
Random Vibration Test Standard	https://www.rflambda.com/pdf/rflambda_random_vibration_MIL-STD-202G.pdf

Ordering Information

Part Number	Modification	Description
RAMP0706G16A	Standard	0.7GHz-6GHz AC Power Amplifier

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.

Important Notice

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