RLNA00M68GA

Ultra Wide Band Low Noise Amplifier
0.1GHz-67.5GHz

Product Description

RLNA00M68GA is an ultra wide band low noise amplifier with a frequency range of 0.1 to 67.5GHz.

The power output of this amplifier is 17dBm typical. The typical gain is 45dB with a flatness of ±3.5 dB.

The working temperature of this product is between - 40 ℃ and + 85 ℃.

Features

- Ultra Wide Band Low Noise Amplifier
- Gain 45dB Typical
- P1dB Output Power 17dBm Typical
- Supply Voltage +12VDC
- 50 Ohm Matched Input/Output
- Low Noise Figure +5.0dB Typical
- Gain Flatness +/-3.5dB Typical

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°C),VCC=+12VDC

Parameter	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Units
Frequency Range	0.1		20	20		40	40		67.5	GHz
Gain		45			41			35		dB
Gain Flatness		±3.5			±3.5			±3.5		dB
Gain Variation Over Temperature (-40℃~+85℃)		±1.5			±2.5			±3.0		dB
Noise Figure		5.0			6.0			9.0		dB
Input VSWR		1.6			1.8			1.8		:1
Output VSWR		1.6			1.8			2.0		:1
Output 1dB Compression Point (P1dB)		17			16			12		dBm
Saturated Output Power (Psat)		20			17			14		dBm
Output Third Order Intercept (OIP3)		28			26			20		dBm
Supply Current (Vcc=+12V)		600			600			600		mA
Isolation S12		-65			-60			-55		dB
Weight					0.1 Max.					lbs.
Impedance					50					Ohms
Input / Output Connectors					1.85mm-Female					
Package					Epoxy Sealed (Standard)					
					Hermetically Sealed (Optional)					

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Absolute Maximum Ratings

Parameter	Rating
Operating Voltage	+15VDC
*RF Input Power (RFIN)	-15dBm

Bias Up Procedure

1.Connect Ground Pin

2.Connect input and output

3.Connect +12V biasing

Bias Down Procedure

1.Turn off +12V biasing

2.Remove RF connection

3.Remove Ground.

Environmental Specifications and Test Standards

Parameter	Description
Operational Temperature	-40ºC to +85ºC (Case Temperature)
Storage Temperature	-50ºC to +105ºC
Thermal Shock	-40ºC → +85ºC (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 +85ºC 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.

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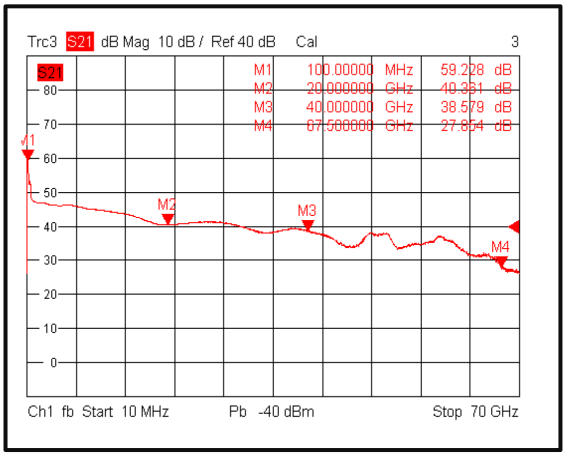
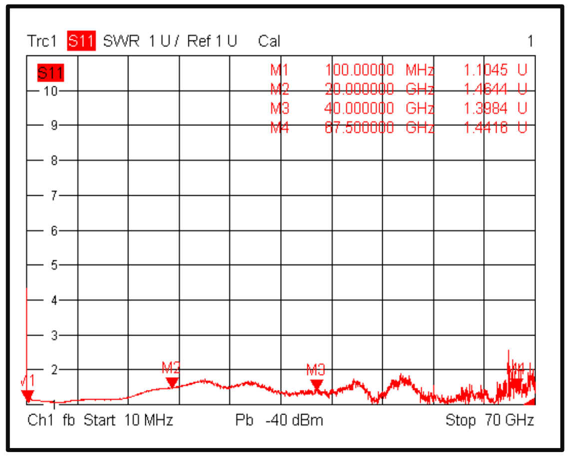
Typical Performance Plots

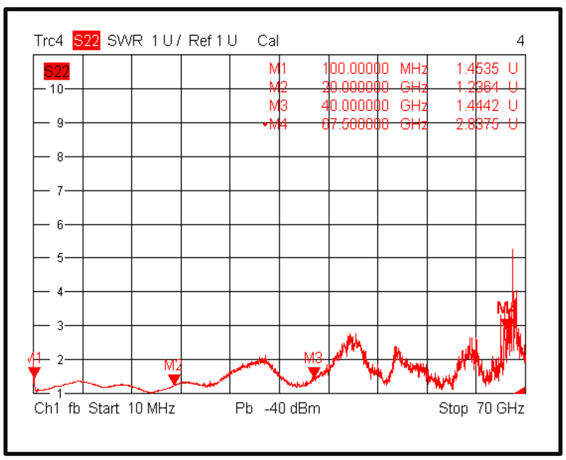
Gain@+25℃



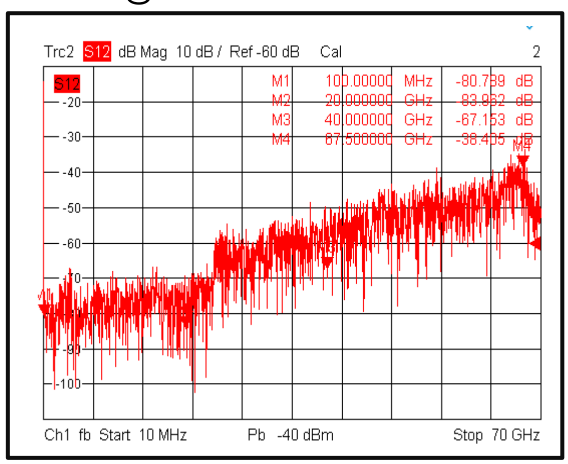
Input VSWR @+25℃



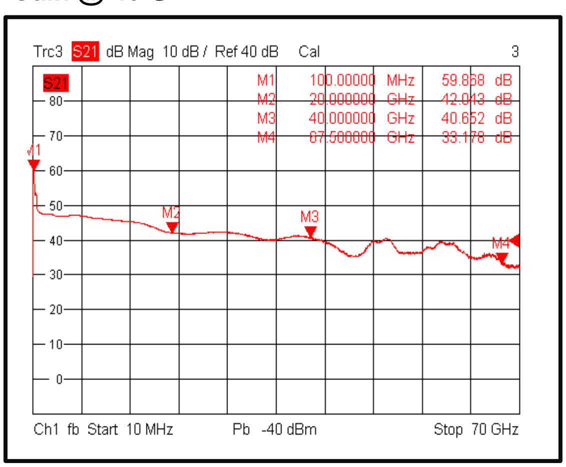
Output VSWR @+25℃



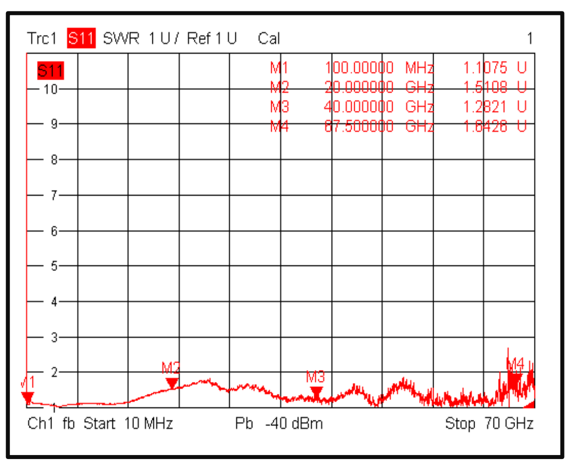
Isolation@+25℃



Gain @-40℃

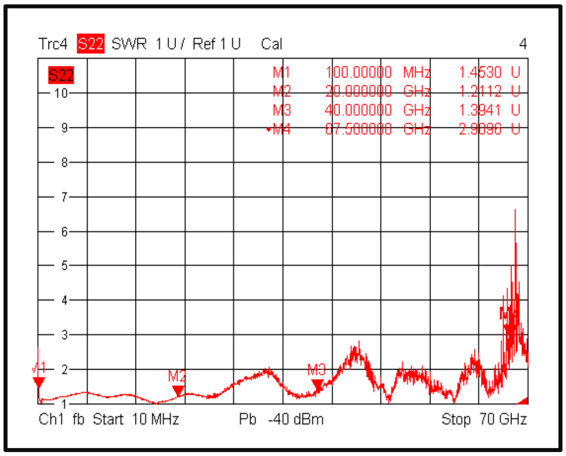


Input VSWR @-40℃

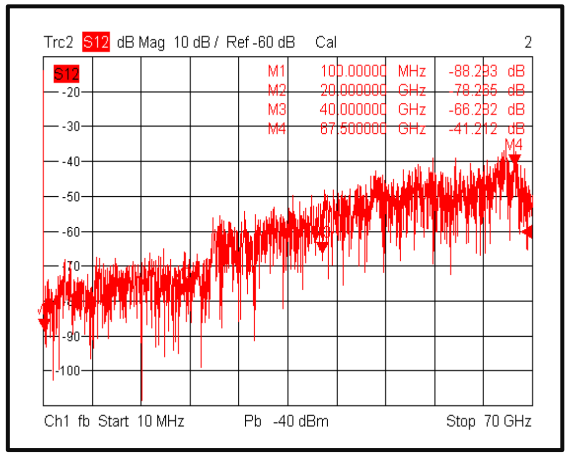


Typical Performance Plots

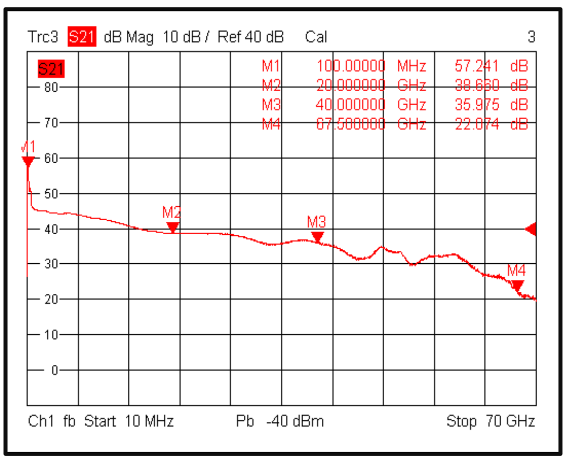
Output VSWR @-40℃



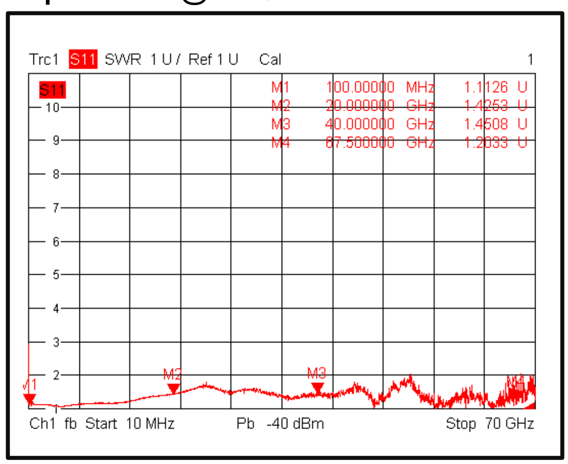
Isolation @-40℃



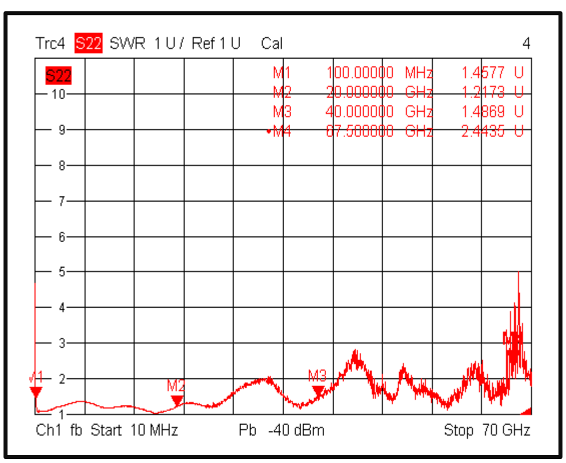
Gain@+85℃



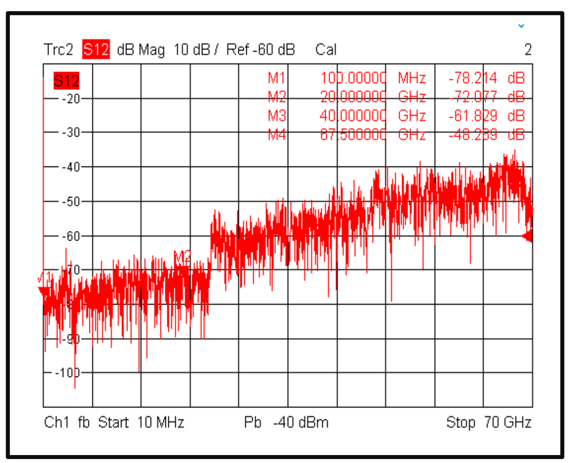
Input VSWR @+85℃



Output VSWR @+85℃



Isolation@+85℃



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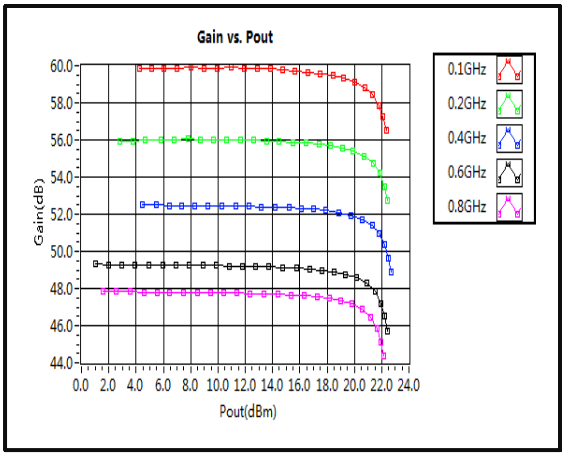
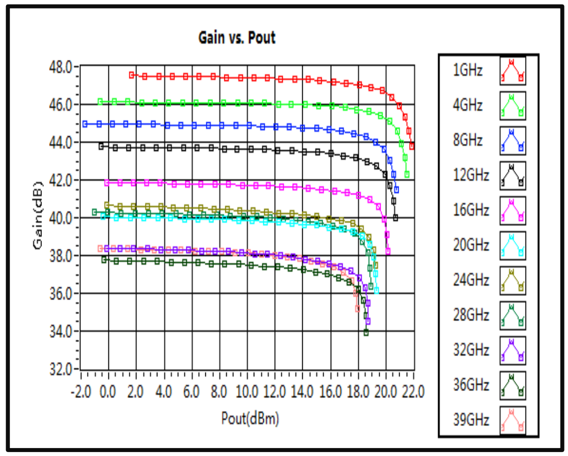
Typical Performance Plots

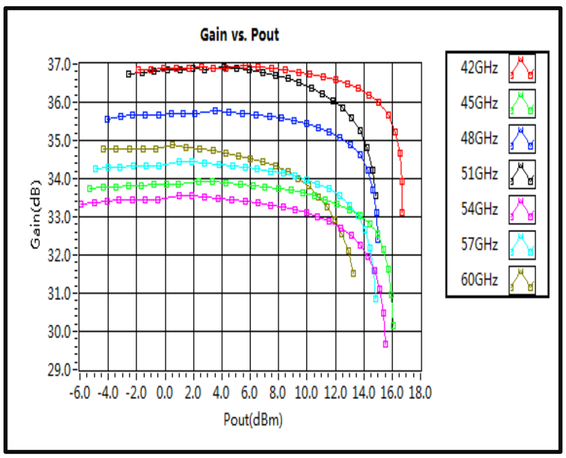
Gain vs. Output Power(0.1-0.8GHz)



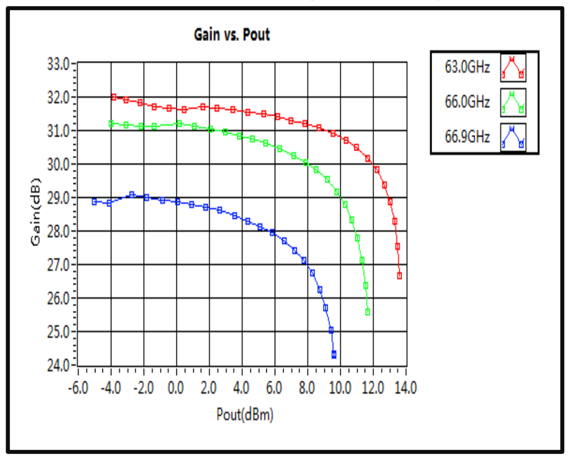
Gain vs. Output Power(1-39GHz)



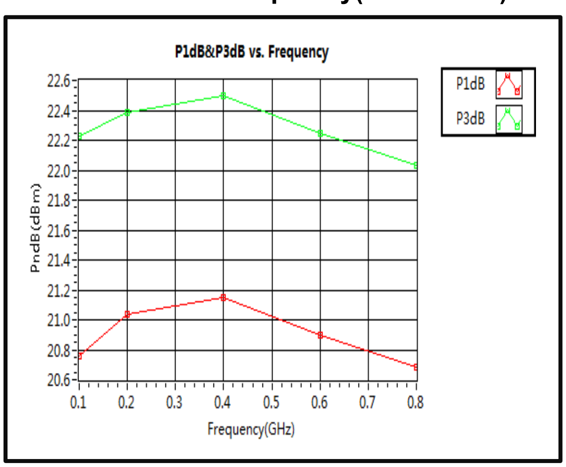
Gain vs. Output Power(42-60GHz)



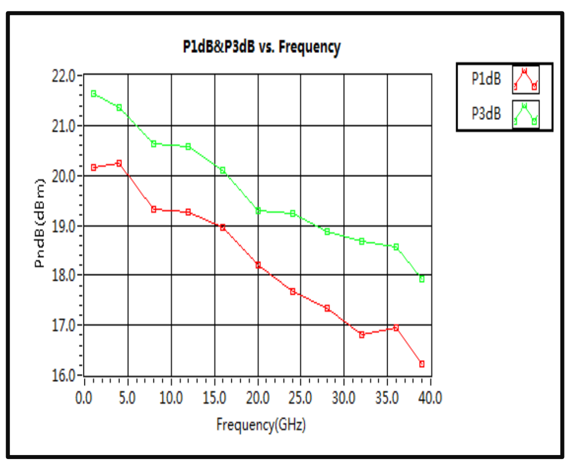
Gain vs. Output Power(63-67GHz)



P1dB&P3dB vs. Frequency(0.1-0.8GHz)

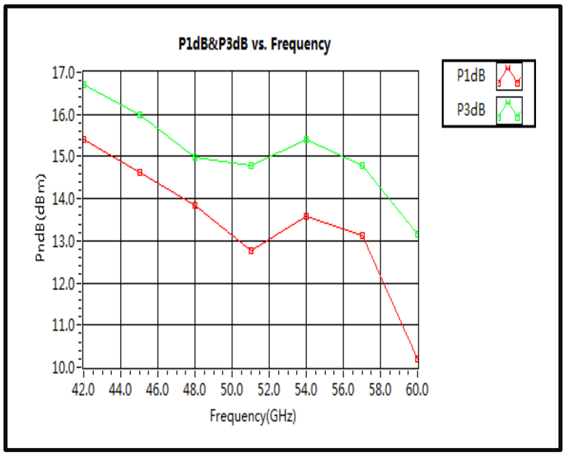


P1dB&P3dB vs. Frequency(1-39GHz)

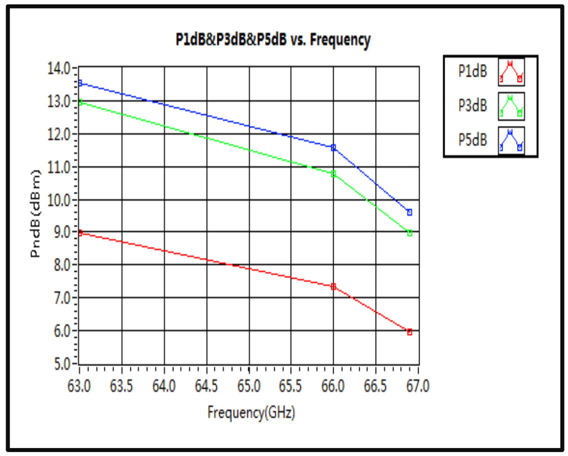


Typical Performance Plots

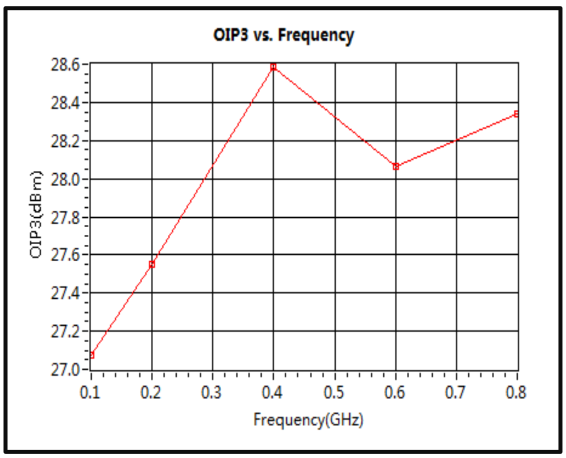
P1dB&P3dB vs. Frequency(42-60GHz)



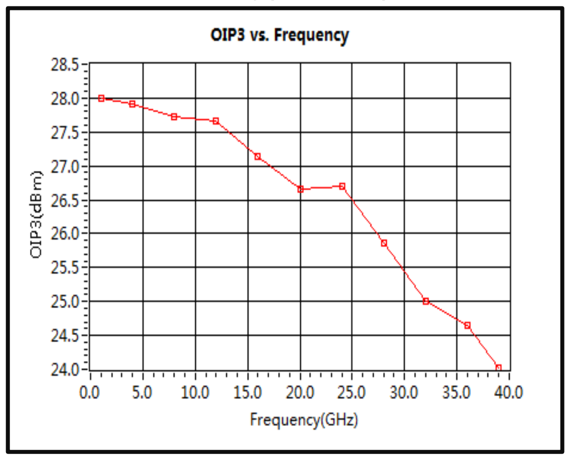
PndB vs. Frequency(63-67GHz)



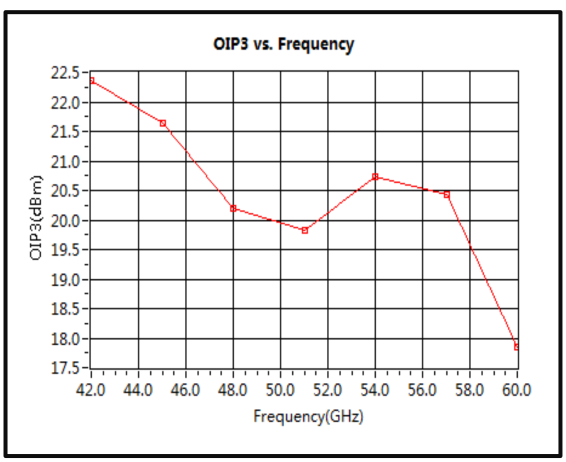
OIP3 vs. Frequency(0.1-0.8GHz)



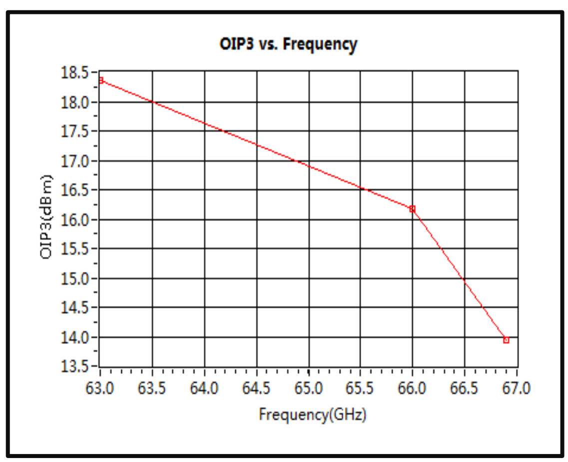
OIP3 vs. Frequency(1-39GHz)



OIP3 vs. Frequency(42-60GHz)

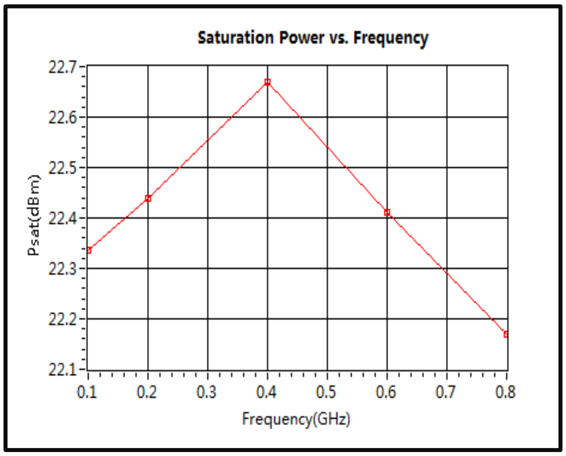


OIP3 vs. Frequency(63-67GHz)

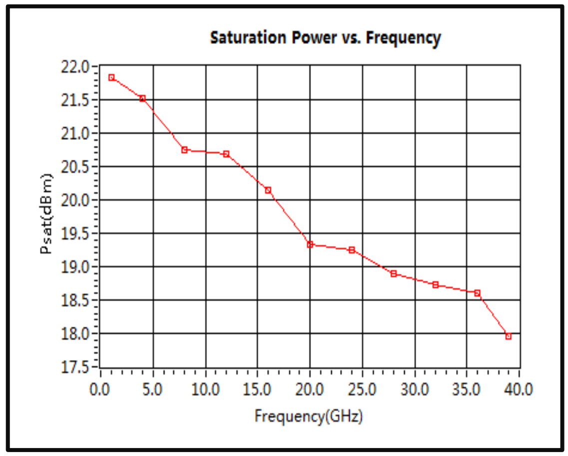


Typical Performance Plots

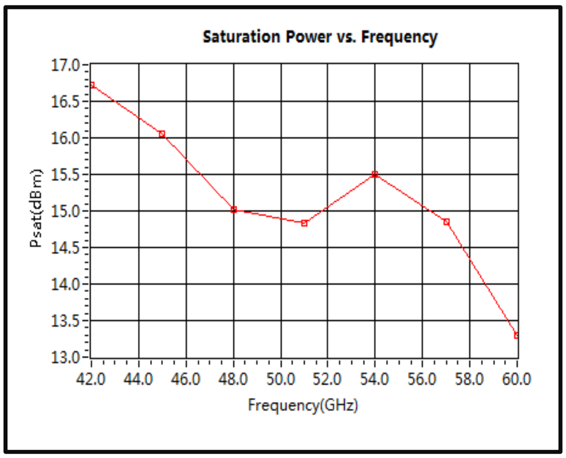
Saturation Power vs. Frequency(0.1-0.8GHz)



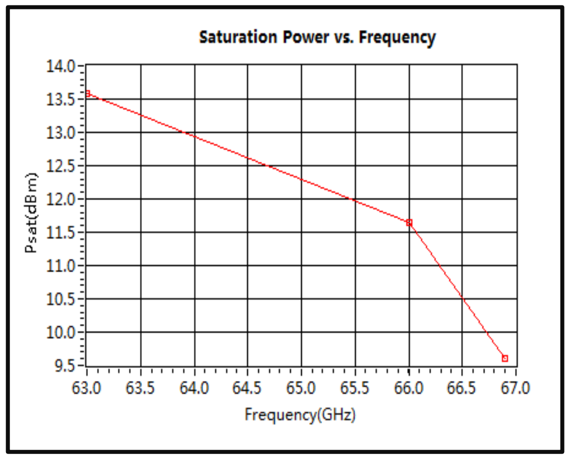
Saturation Power vs. Frequency(1-39GHz)



Saturation Power vs. Frequency(42-60GHz)

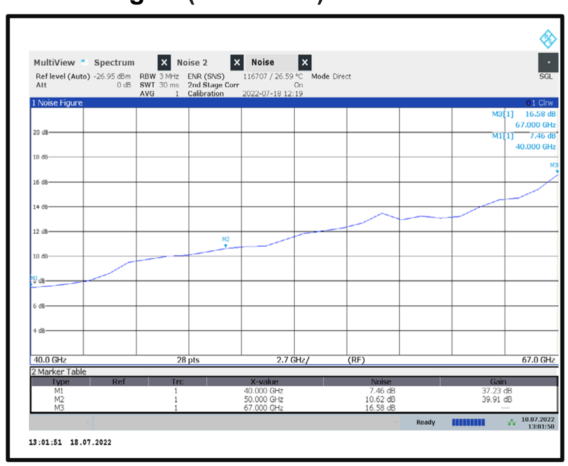


Saturation Power vs. Frequency(63-67GHz)



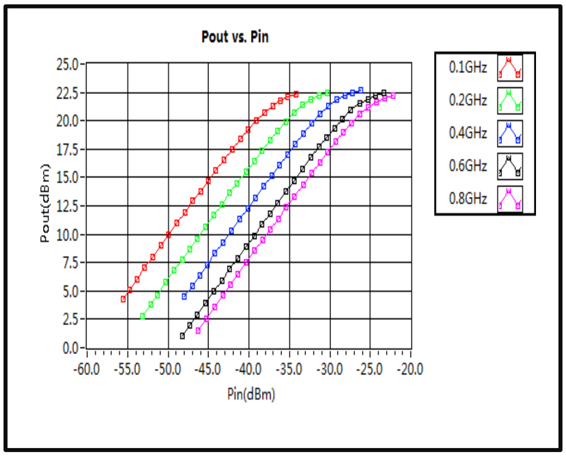
Noise Figure(0.1-40GHz)

Noise Figure(40-67GHz)

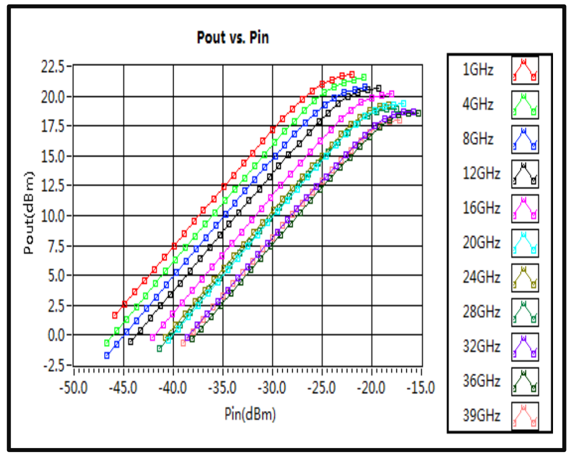


Typical Performance Plots

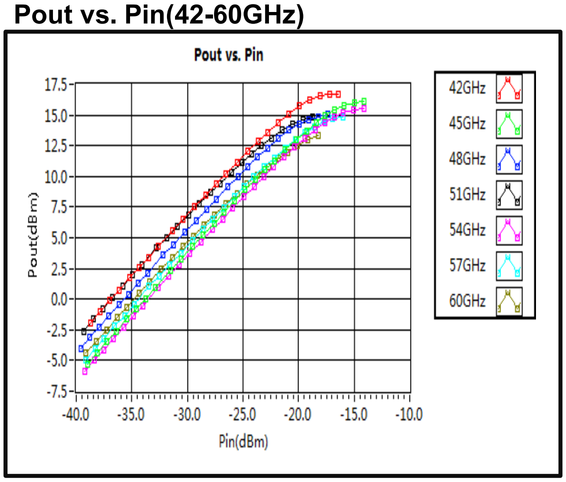
Pout vs. Pin(0.1-0.8GHz)



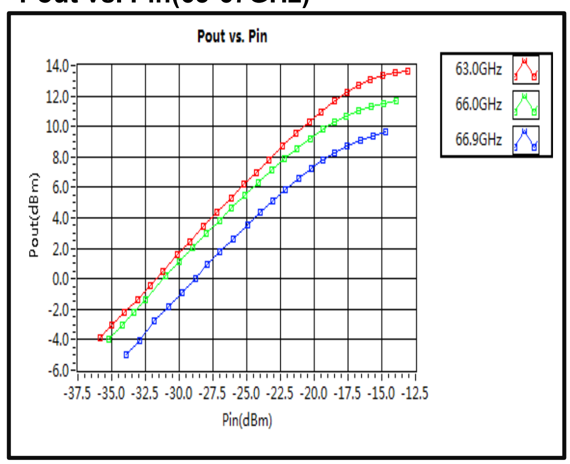
Pout vs. Pin(1-39GHz)



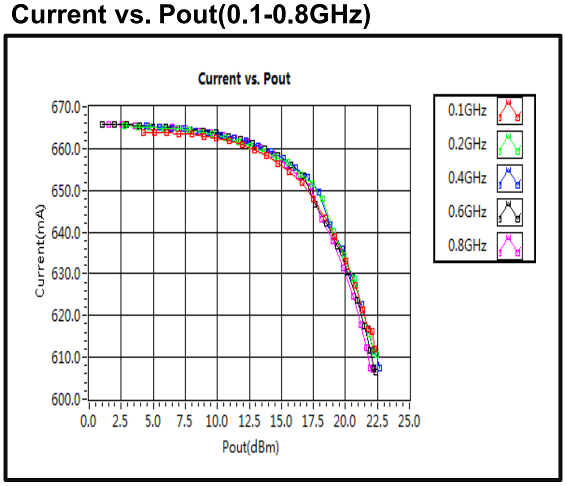
Pout vs. Pin(42-60GHz)



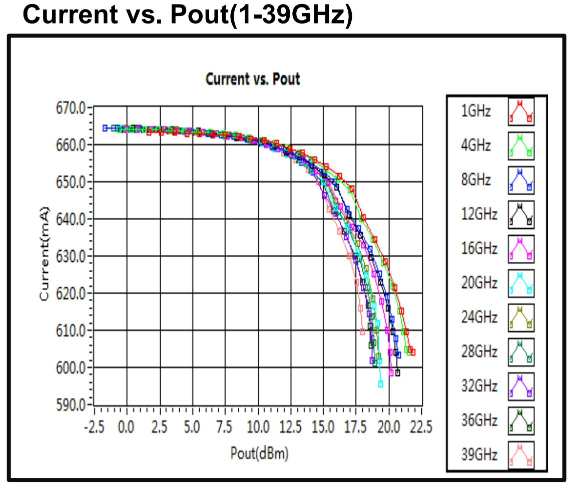
Pout vs. Pin(63-67GHz)



Current vs. Pout(0.1-0.8GHz)

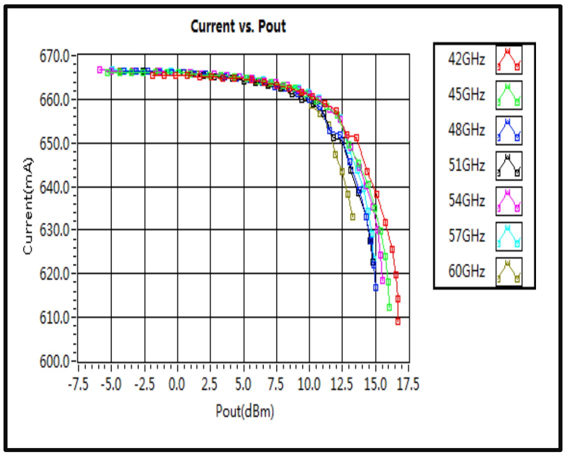


Current vs. Pout(1-39GHz)

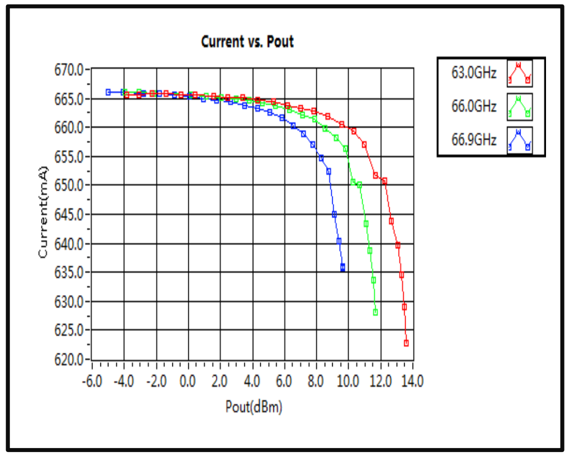


Typical Performance Plots

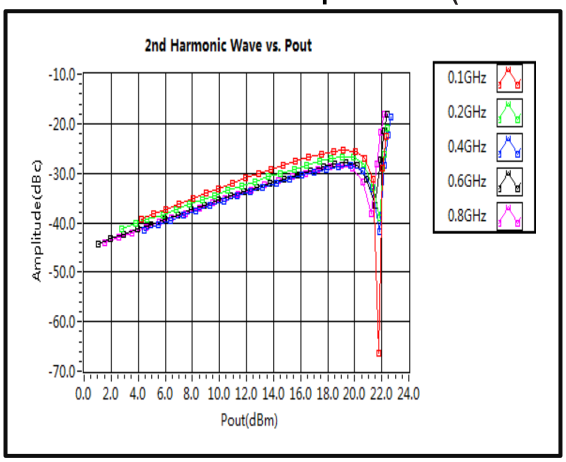
Current vs. Pout(42-60GHz)



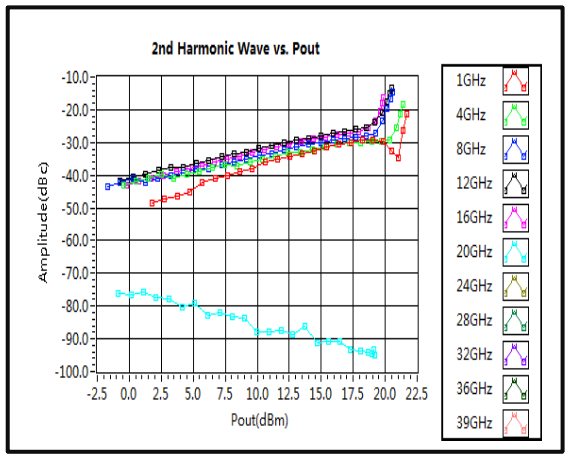
Current vs. Pout(63-67GHz)



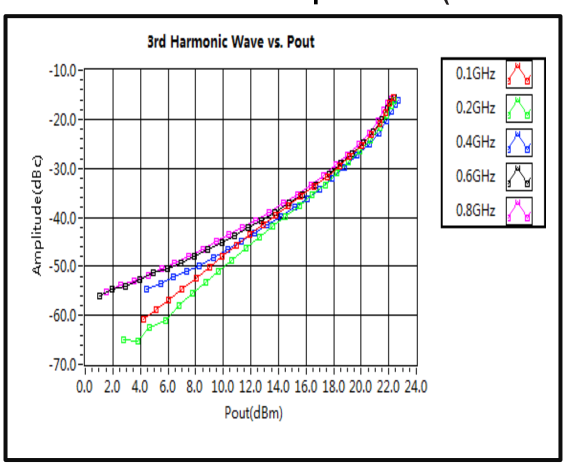
2nd Harmonic Wave Output Power(0.1-0.8GHz)



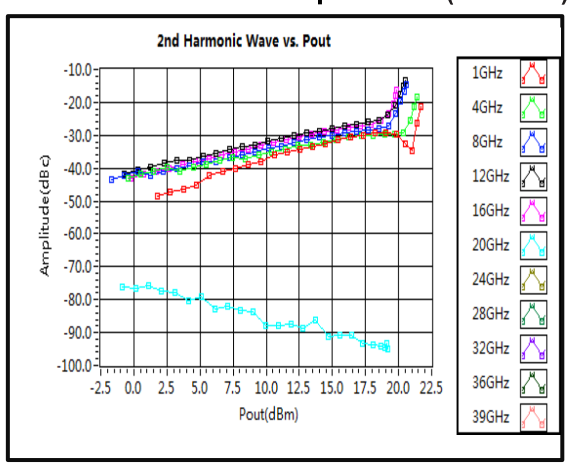
2nd Harmonic Wave Output Power(1-39GHz)



3rd Harmonic Wave Output Power(0.1-0.8GHz)

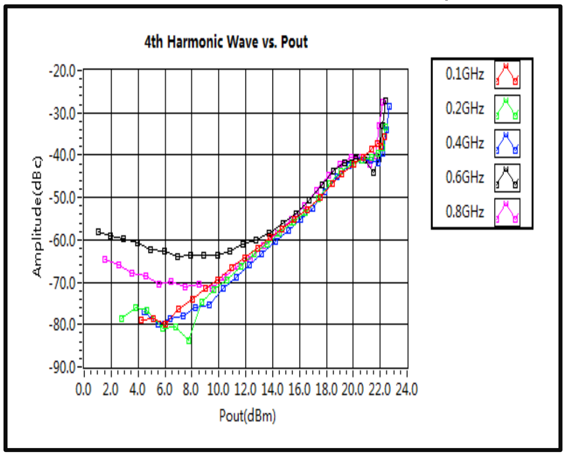


3rd Harmonic Wave Output Power(1-39GHz)

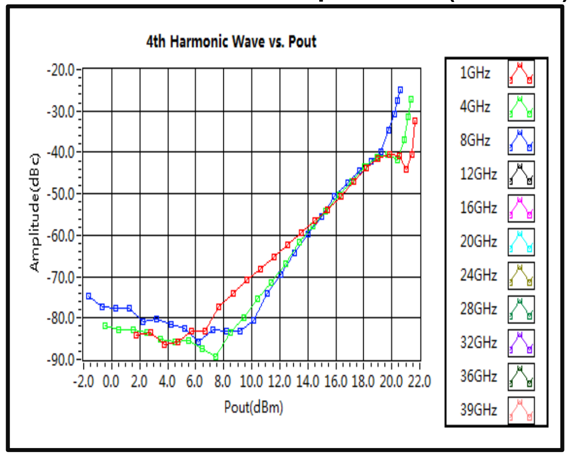


Typical Performance Plots

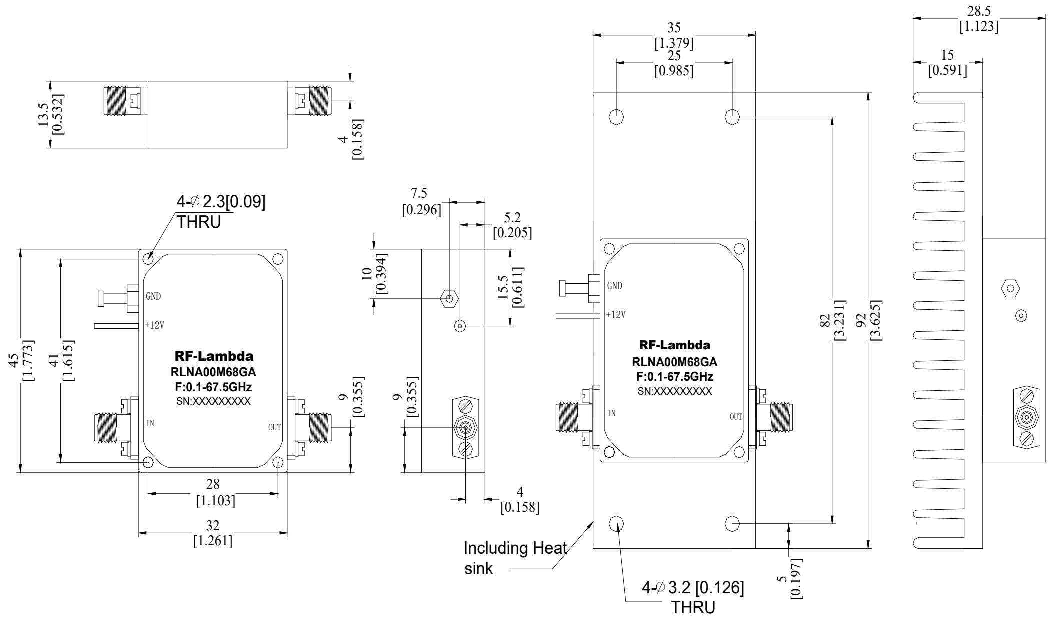
4th Harmonic Wave Output Power(0.1-0.8GHz)



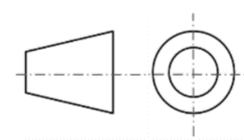
4th Harmonic Wave Output Power(1-39GHz)



Outline Drawing



Notes:
1. Package Material: Aluminum
2. Finish: Gold Plated
3. All dimensions are in millimeters [inches].
4. Housing Tolerances ±0.1 [0.004] 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.



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
RLNA00M68GA	Standard	0.1GHz-67.5GHz Ultra Wide Band Low Noise 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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