



4W Ultra Wide Band Power Amplifier 0.1GHz~22GHz

- High output power >+36dBm.
- Microwave radio and VSAT
- Aerospace and military application
- Telecom infrastructure
- High Peak to average handle capability
- High Linearity and low noise figure
- All specifications can be modified upon request



Parameter	Min.	Typ.	Max.	Min.	Typ.	Max.	Units
Frequency Range	0.1		10	11		22	GHz
Gain	31	37	40	31	35	40	dB
Gain Flatness		±5			±5		dB
Gain Variation Over Temperature (-45 ~ +85)		±3			±3		dB
Noise Figure		3.5			3		dB
Input Return Loss		15			15		dB
Output Return Loss		25			25		dB
Output Power for 1 dB Compression (P1dB)	34	34.5	35.5	27	30	33	dBm
Output Power for 3 dB Compression (P3dB)	35	36	37	31	33	36	dBm
Saturated Output Power (Psat)		37			36.5		dBm
Output Third Order Intercept (IP3)		42			40		dBm
Supply Current (+24 VDC)		1400	1800		1400	1800	mA
Isolation S12	79	85	94	76	86	94	dB
Input Max Power(no damage)			-3			-3	dBm
Weight	1285						g
Impedance	50						Ohms
Input /Output Connector	SMA-Female						
Finishing	Nickel Plating						
Material	Aluminum/copper						

* P1dB, P3dB and Psat power testing signal: 200µs pulse width with 10% duty cycle.

* For average CW power testing, a 5dB back off from Psat is required unless water/oil cooling system is applied.

Ultra Wide Band 4W Power Amplifier 0.1-22GHz



RF-LAMBDA

The power beyond expectations

RFLUPA01M22GA

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Absolute Maximum Ratings	
Supply Voltage	+28Vdc
RF Input Power (RFIN) Pin _{max} = Psat - Gainsat	-3dBm
Storage Temperature(°C)	-50 to +125

Note: 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

Biasing Up Procedure	
Step 1	Connect input and output with 50 Ohm source/load. (in band VSWR<1.9:1 or >10dB return loss)
Step 2	Connect Ground Pin
Step 4	Connect +24V biasing
Power OFF Procedure	
Step 2	Turn off +24V biasing
Step 3	Remove RF connection
Step 4	Remove Ground.

Environment Specifications	
Operational Temperature (°C)	-45 ~ +85(Case Temperature must be less than 85C all time)
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

Note: The operating temperature for the unit is specified at the package base. It is the user's responsibility to ensure the part is in an environment capable of maintaining the temperature within the specified limits

Ordering Information		
Part No	ECCN	Description
RFLUPA01M22GA	EAR99	0.1GHz~22GHz 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.

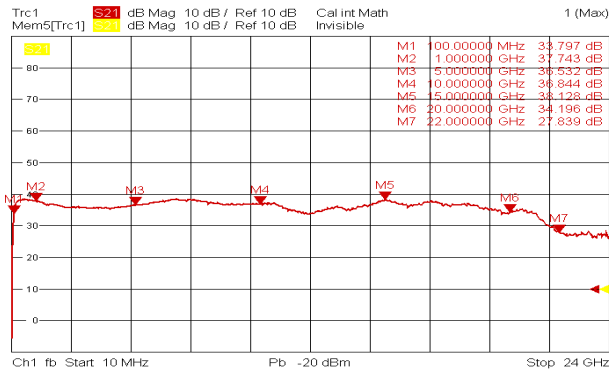
Proper electrostatic discharge (ESD) precautions are recommended to avoid performance degradation or loss of functionality.

What is not covered with warranty?

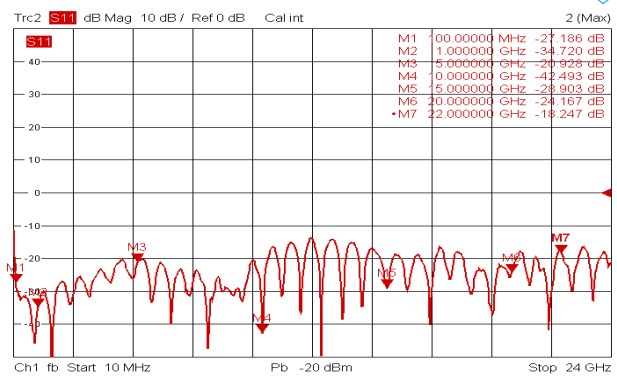
Each of RF-Lambda amplifiers will go through power and temperature stress testing. Due to fragile of the die, IC or MMIC, those are not covered by warranty. Any damage to those will NOT be free to repair.



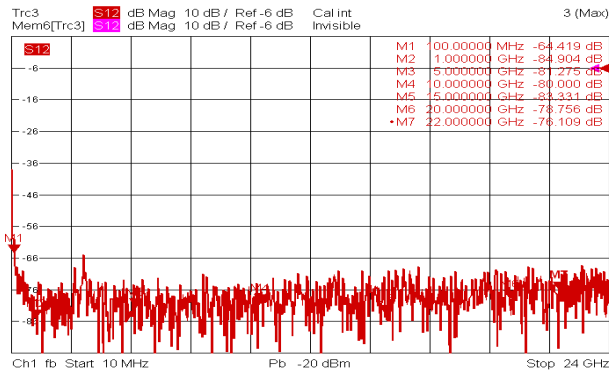
Gain



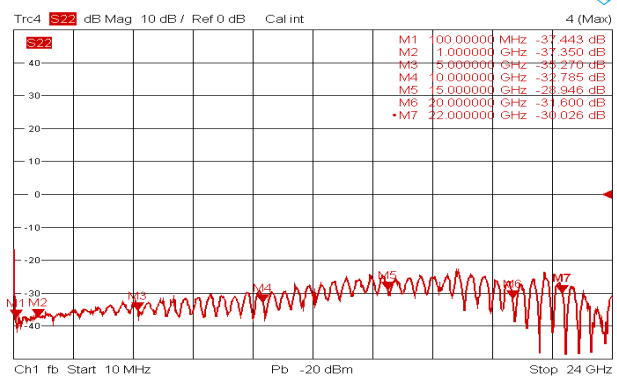
Input Return Loss



Isolation

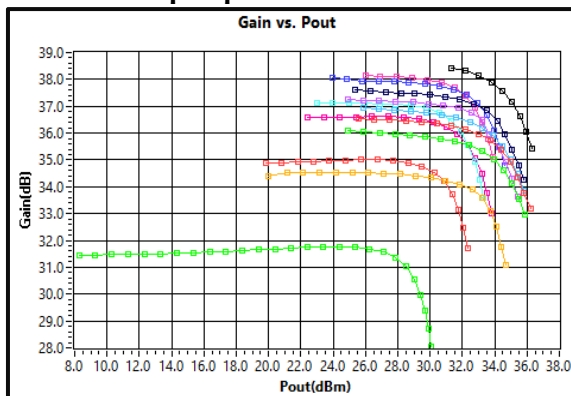


Output Return Loss

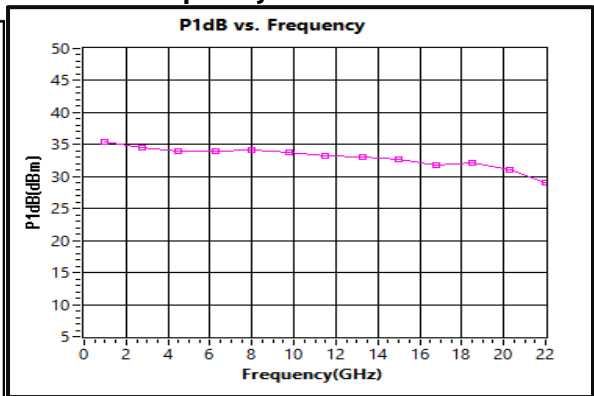


Note: Input/output return loss measurements include attenuators to protect equipment

Gain vs. output power

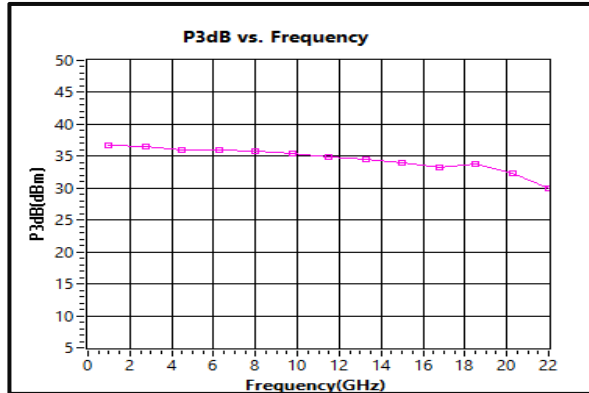


P1dB vs. Frequency

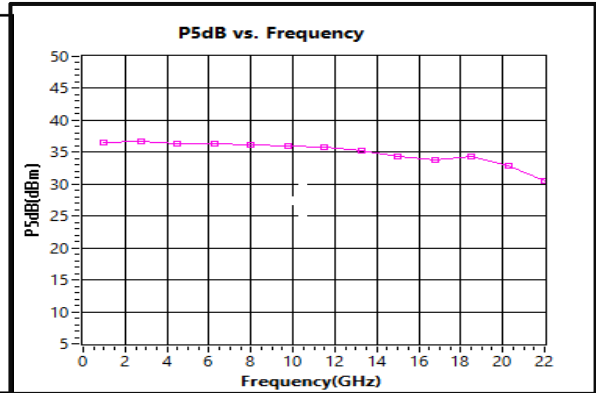




P3dB vs. Frequency

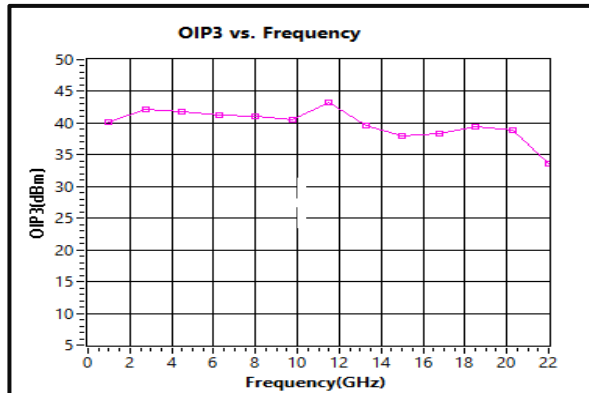


P5dB vs. Frequency

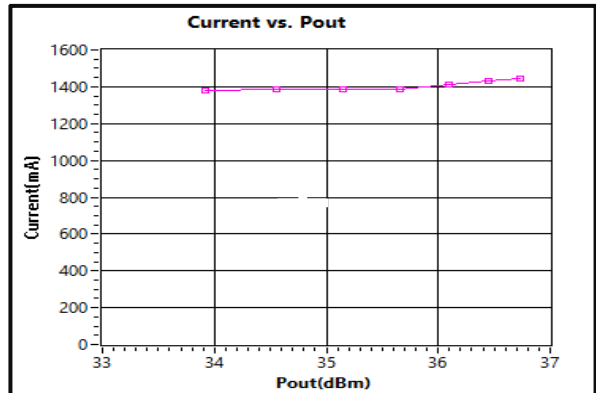


- 1.0(GHz)
- 2.8(GHz)
- 4.5(GHz)
- 6.2(GHz)
- 8.0(GHz)
- 9.8(GHz)
- 11.5(GHz)
- 13.2(GHz)
- 15.0(GHz)
- 16.8(GHz)
- 18.5(GHz)
- 20.2(GHz)
- 22.0(GHz)

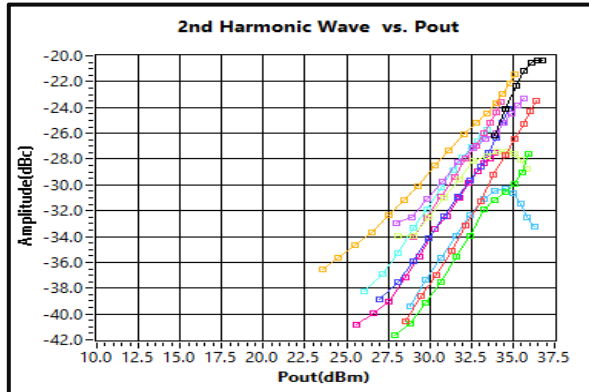
Output Third Order Intercept (IP3)



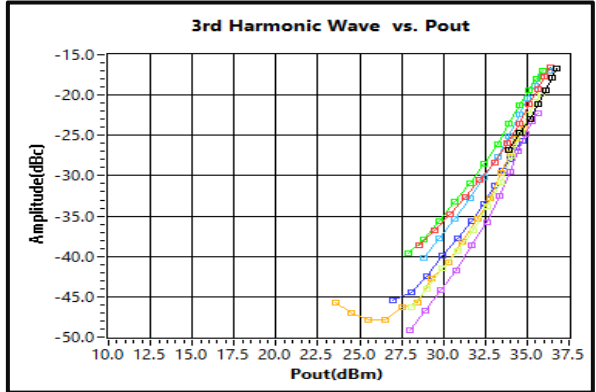
Current vs. Pout



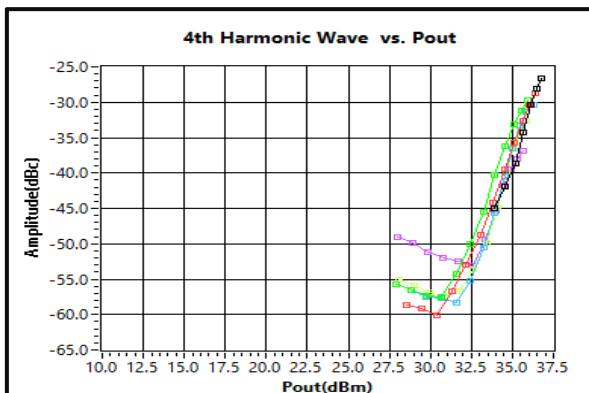
2nd Harmonic Wave Output Power



3rd Harmonic Wave Output Power



4th Harmonic Wave Output Power

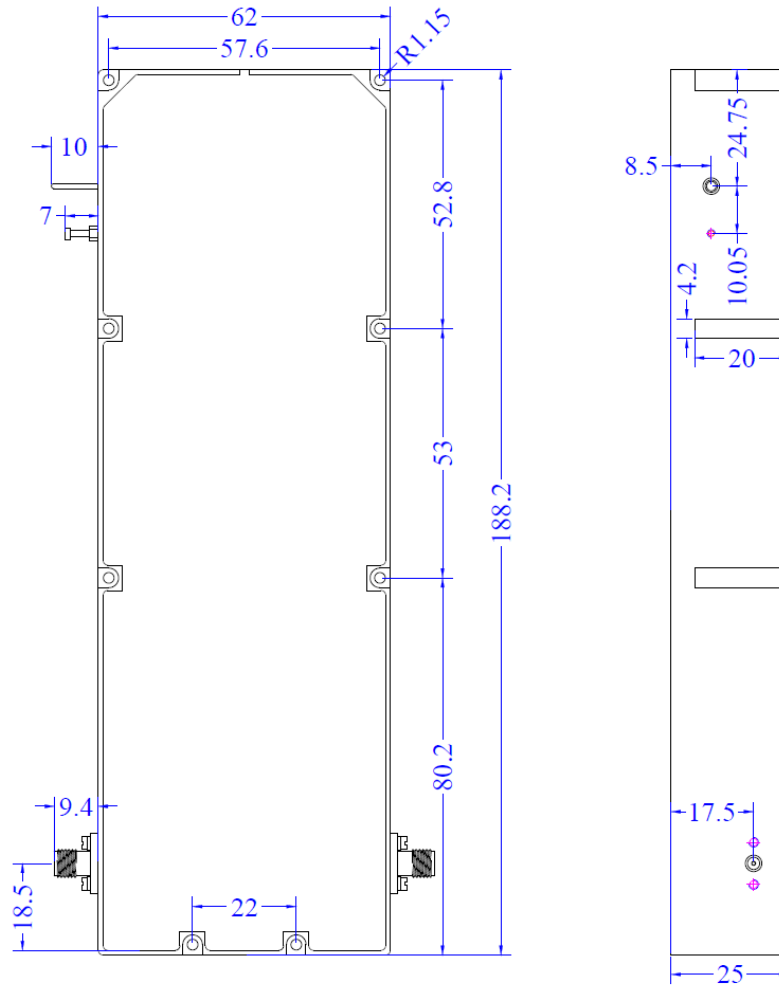


- 1.0(GHz)
- 2.8(GHz)
- 4.5(GHz)
- 6.2(GHz)
- 8.0(GHz)
- 9.8(GHz)
- 11.5(GHz)
- 13.2(GHz)
- 15.0(GHz)
- 16.8(GHz)
- 18.5(GHz)
- 20.2(GHz)
- 22.0(GHz)

Ultra Wide Band 4W Power Amplifier 0.1-22GHz



Package Code: **WP**
(Default Package)



Ultra Wide Band 4W Power Amplifier 0.1-22GHz

Includes current protection and over temp shutdown protection

Heat Sink and cooling fan required during operation



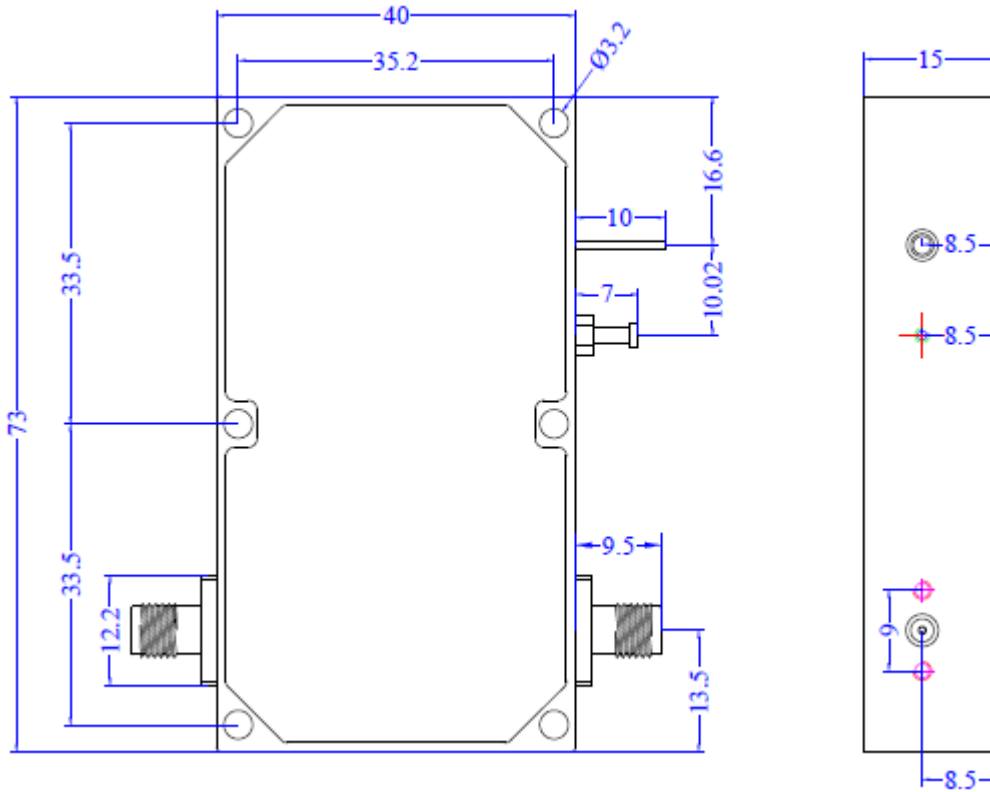


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Package Code: **NP**



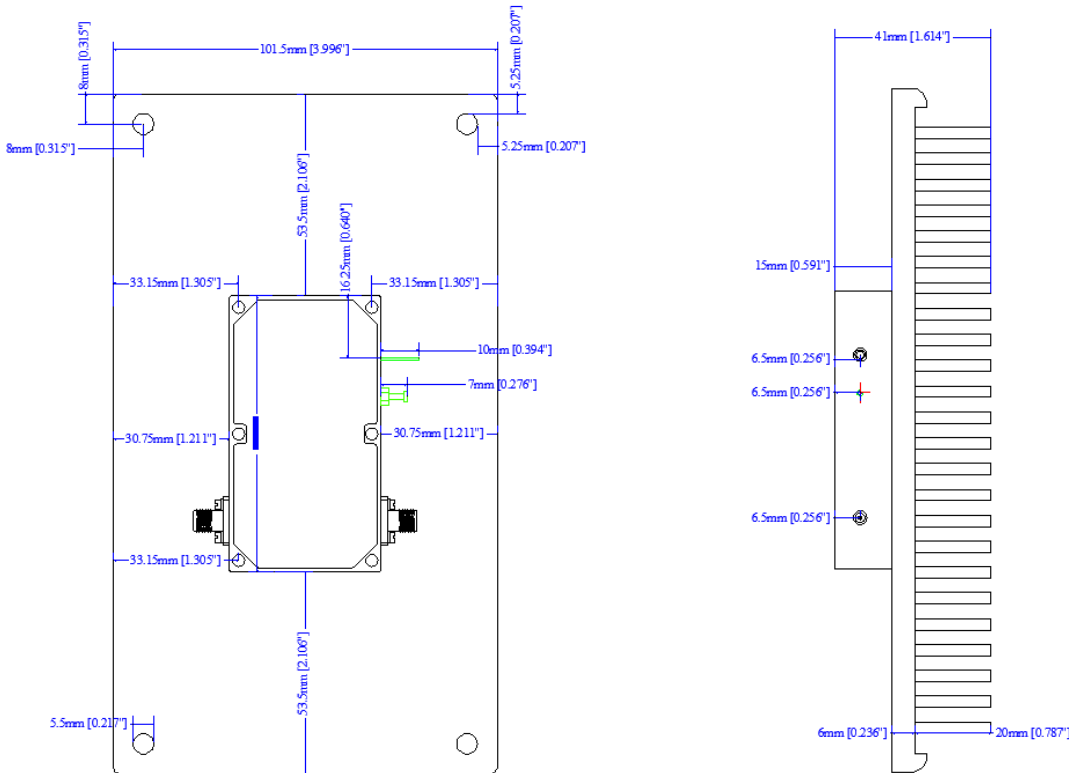
No protection included

Heat Sink and cooling fan required during operation





Heatsink for NP model



*****Heat Sink and cooling fan required during operation*****



Important Notice

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