# 2W Wide Band Solid State Power Amplifier
# 6GHz~10GHz


## *Features*

- Gain: 48dB Typical
- Noise Figure: 7.5dB Typical
- P1dB Output Power: +31dBm
- Supply Voltage: +31.5V

## *Typical Applications*

- Wireless Infrastructure
- Military & Aerospace Applications
- Test & Measurement

*Electrical Specifications , TA = +25°C, Vcc = +31.5V*

| Parameter | Min. | Typ. | Max. | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|---|---|
| Frequency Range | 6 | | 8 | 8 | | 10 | GHz |
| Gain | 46 | 48 | | 45 | 47 | | dB |
| Gain Flatness | | ±1.0 | | | ±1.0 | | dB |
| Gain Variation Over Temperature (-40°C~+85°C ) | | ±2.0 | | | ±2.0 | | dB |
| Noise Figure | | 7.5 | | | 7.5 | | dB |
| Input Return Loss | | 15 | | | 15 | | dB |
| Output Return Loss | | 12 | | | 14 | | dB |
| Output 1dB Compression Point (P1dB) | 31 | 33 | | 31 | 32.5 | | dBm |
| Saturated Output Power (Psat) | | 34 | | | 33.5 | | dBm |
| Output Third Order Intercept (OIP3) | | 41.5 | | | 41.5 | | dBm |
| Supply Voltage (Vcc) | 20 | | 40 | 20 | | 40 | V |
| Supply Current (Vcc=+31.5V) | | 420 | 500 | | 420 | 500 | mA |
| Weight | 27.4 | | | | | | Ounces |
| Impedance | 50 | | | | | | Ohms |
| Input / Output Connectors | SMA - Female | | | | | | |
| Finish | Nickel Plated | | | | | | |
| Material | Copper | | | | | | |
| Package Sealing | Epoxy Sealed | | | | | | |

* 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.

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### *Absolute Maximum Ratings*

| | |
|---|---|
| Maximum Supply Voltage | +40V |
| RF Input Power | Psat - Gain |

### *Biasing Up Procedure*

| | |
|---|---|
| Step 1 | Connect Ground Pin |
| Step 2 | Connect input and output with 50 Ohm source/load. ( in band VSWR<1.9:1 or >10dB return loss) |
| Step 4 | Connect +31.5V |
| Power OFF Procedure | |
| Step 2 | Turn Off +31.5V |
| Step 3 | Remove RF Connection |
| Step 4 | Remove Ground |

### *Environmental Specifications and Test Standards*

| Parameter | Description |
|---|---|
| Operational Temperature | -40℃~+85℃<br>(Case Temperature) |
| Storage Temperature | -50℃~+105℃ |
| Thermal Shock | -40℃ → +85℃<br>(5 Cycles / 10 hours) |
| Random Vibration | MIL-STD-202G<br>Table 214-I, Test Condition Letter C<br>1.5 Hours Per Axis |
| High Temperature Burn In | Temperature +85℃ for 72 Hours |
| Shock | 1. Weight >20g, 50g half sine wave for 11ms, Speed variation 3.44m/s<br>2. Weight <=20g, 100g Half sine wave for 6ms, Speed variation 3.75m/s<br>3. Total 18 times (6 directions, 3 repetitions per direction). |
| Altitude | Standard: 30,000 Ft (Epoxy Sealed Controlled Environment)<br>Optional: Hermetically Sealed (60,000 ft. 1.0 PSI min) |
| Hermetically Sealed (Optional) | MIL-STD-883 (For Hermetically Sealed Units) |

## *Ordering Information*

| Part No. | Description |
|---|---|
| RFLUPA06G10G2 | 6GHz~10GHz 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.

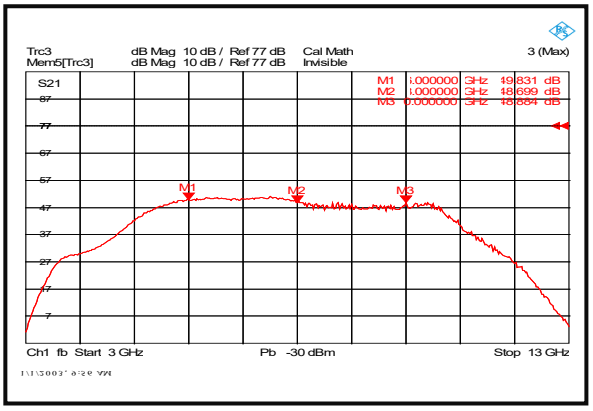
Proper electrostatic discharge (ESD) precautions are recommended to avoid performance degradation or loss of functionality.

What is not covered with warranty?

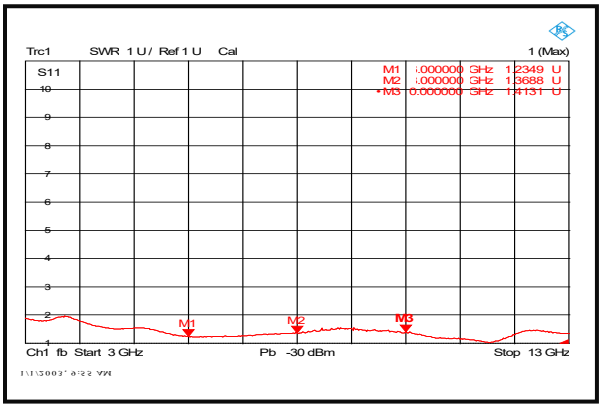
Each RF - Lambda amplifier will go through power and temperature stress testing.
Since the die, ICs or MMICs are fragile, these are not covered by warranty. Any damage to these will NOT be free to repair.

## *Typical Performance Plots*

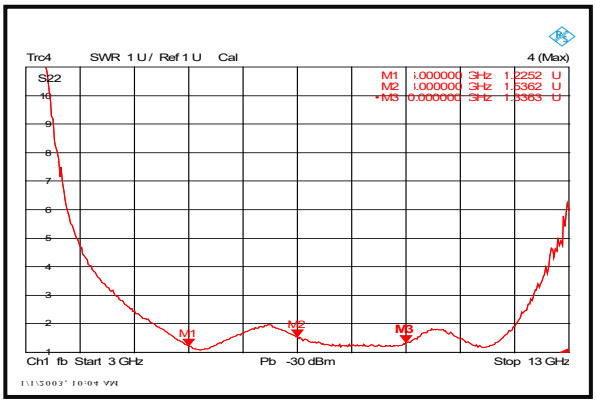
### Gain @+25°C



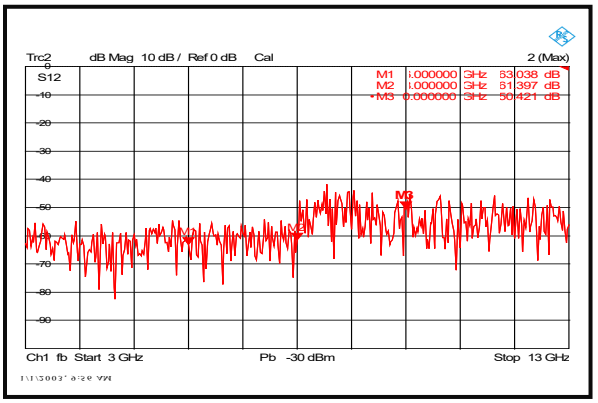

### Input VSWR @+25°C



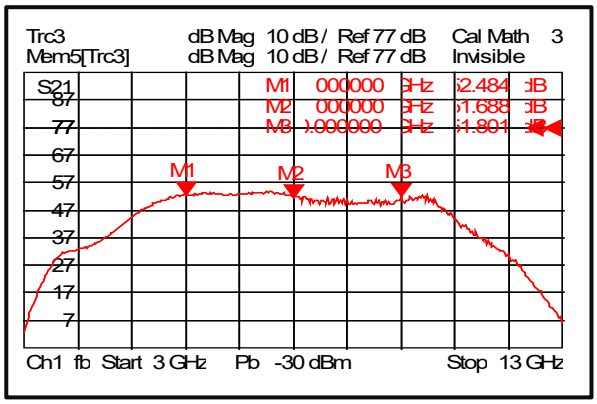

### Output VSWR @+25°C



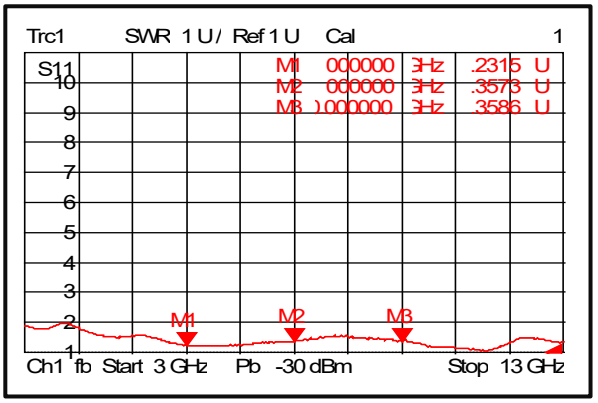

### Isolation @+25°C




### Gain @-40°C




### Input VSWR @-40°C

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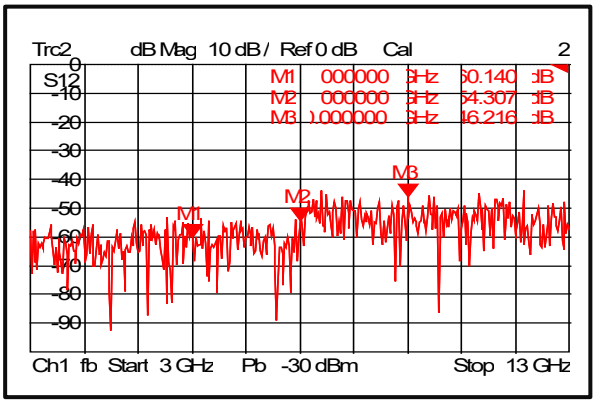
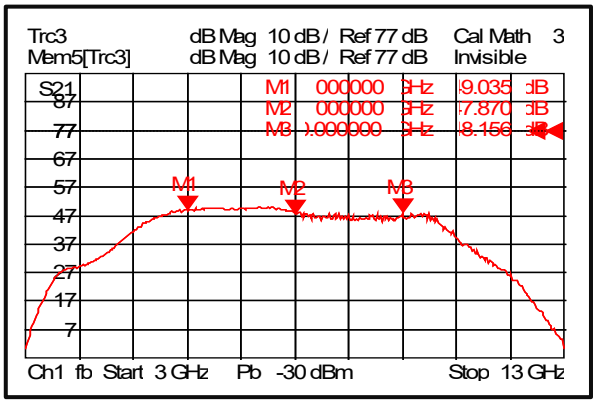
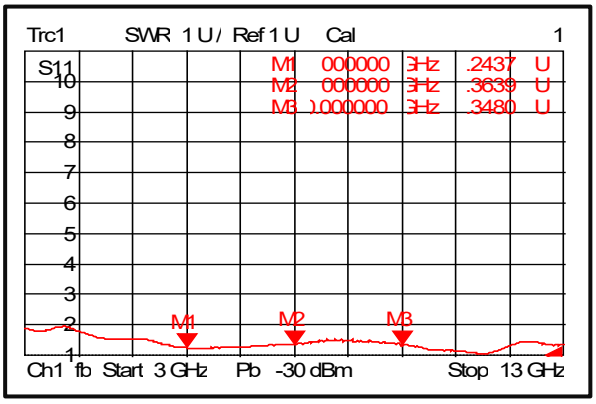
## Isolation @-40℃



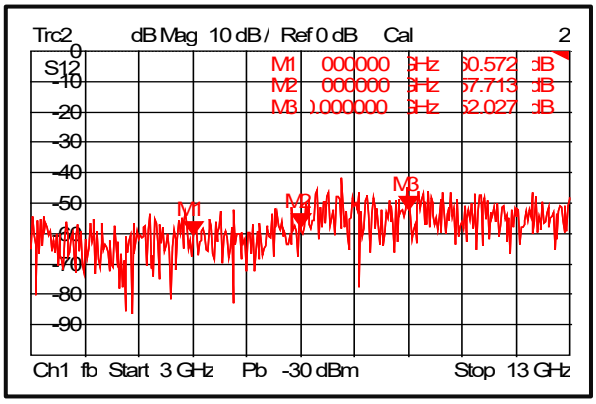

## Gain @+85℃



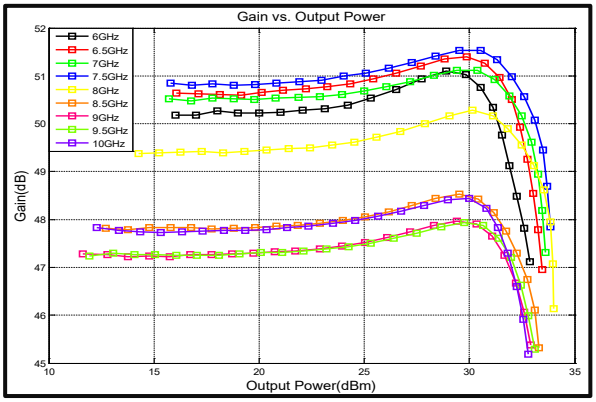

## Input VSWR @+85℃



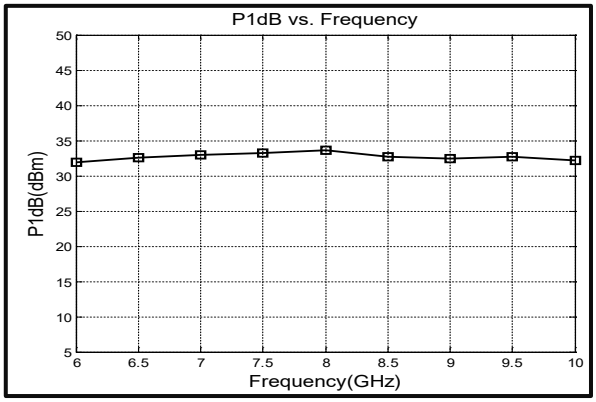

## Isolation @+85℃




## Gain vs. Output Power




## P1dB vs. Frequency

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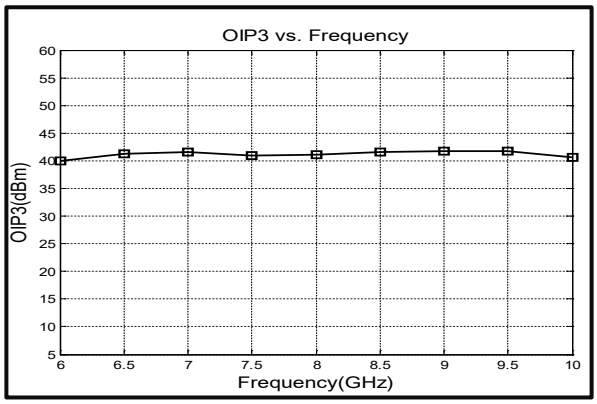
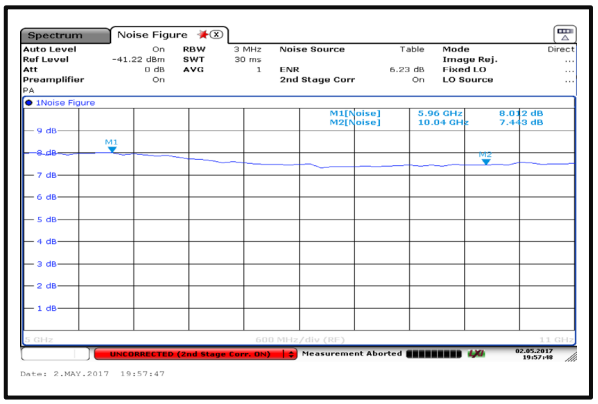
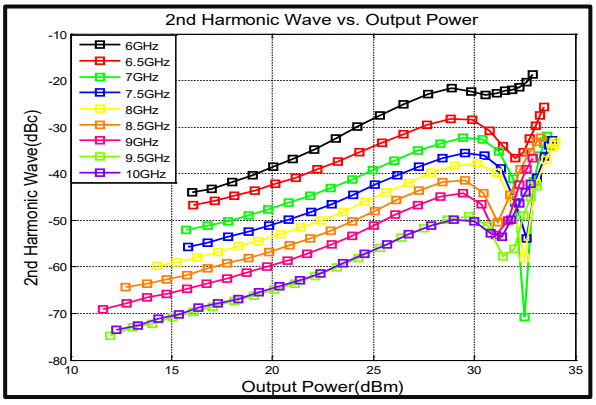
## Output Third Order Intercept (OIP3)



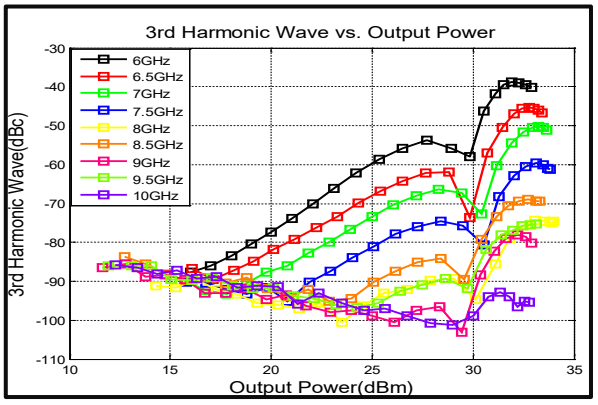

## Noise Figure



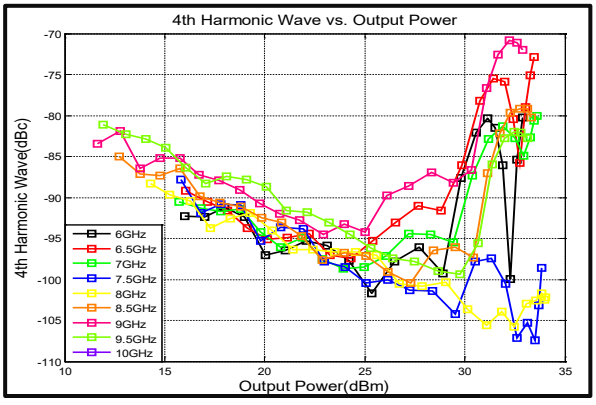

## 2nd Harmonic Wave Output Power




## 3rd Harmonic Wave Output Power




## 4th Harmonic Wave Output Power

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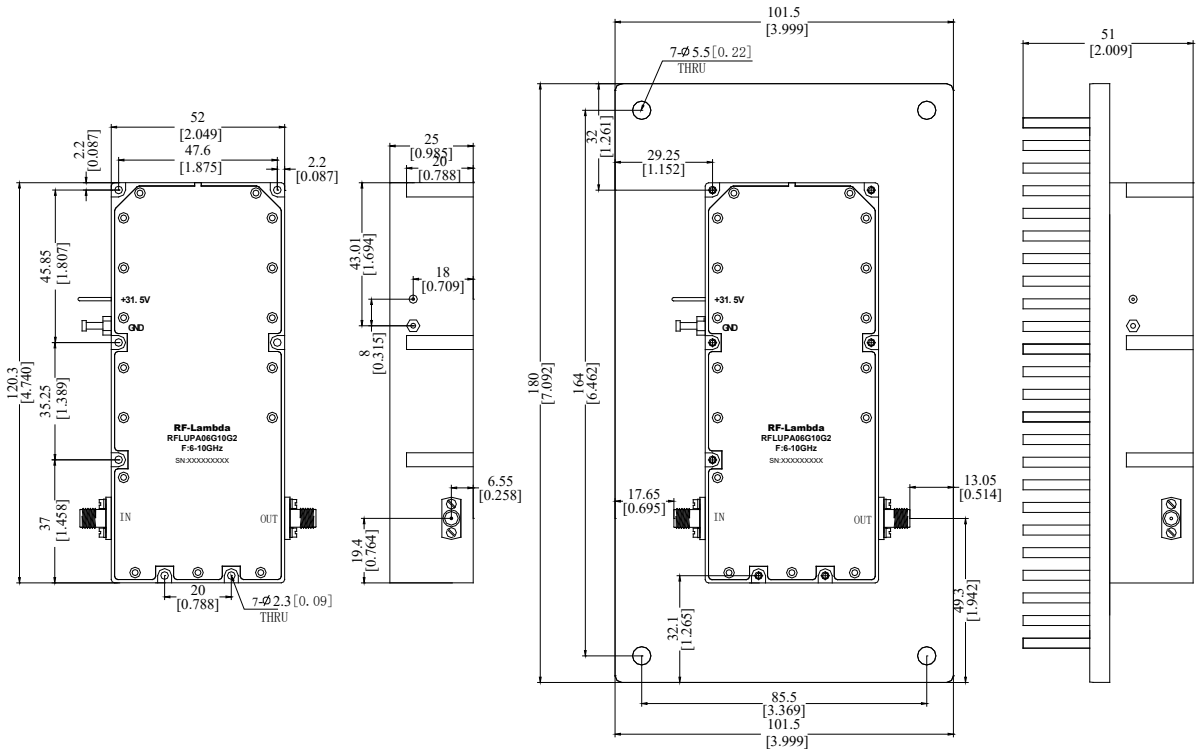
## Outline Drawing:

All Dimensions in mm [inches]
Housing Tolerances ± 0.2 [0.008]




Notes:

1. Heat Sink required during operation (Sold Separately)
2. Standard torque wrench must be used to secure RF connectors


## Important Notice

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