Solid State Power Amplifier
2GHz~6GHz

Features

- Solid State Power Amplifier
- Gain: 50dB Typical
- Output Power: +44dBm Typical

Typical Applications

- Wireless Infrastructure
- Test and Measurement
- Military and Aerospace

Electrical Specifications, T_A = +25°C, Vdd = +28V

Parameter	Min	Typ	Max	Units
Frequency Range		2 - 6		GHz
Gain		50		dB
Gain Variation Over Temperature		5		dB
Input Return Loss		-15		dB
Output Return Loss		-10		dB
Saturated Power (Psat)		44.5		dBm
Supply Current (Vdd=+28V)		600	4500	mA
Power Supply	24	28	36	V
Isolation S12		-60		dB
Input Max		Psat – Gain		dBm
Weight		650		g
Impedance		50		Ohms
Power Connector		D-Sub 9-pin		
Input / Output Connectors		SMA-Female		
Finish		Nickel Plated		
Material		Aluminum / Copper		

* P1dB, P3dB and Psat power testing signal: 200μs pulse width with 10% duty cycle.
* For average CW power testing or increased duty cycle, a 5dB back off from Psat is required unless water/oil cooling system is applied.

RF-LAMBDA USA www.rflambda.com
Sales: sales@rflambda.com Technical : support@rflambda.com

Absolute Maximum Ratings	
Supply Voltage	+36 VDC
RF Input Power (RFIN) Pin_max = Psat - Gainsat	Psat – Gain

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

Environmental Specifications and Test Standards

Parameter	Description
Operational Temperature	-45°C~+55°C (Case Temperature less than +85°C)
Storage Temperature	-50°C~+125°C
Thermal Shock	-45°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)

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.	Description
RFLUPA02G06GA	2GHz~6GHz 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.

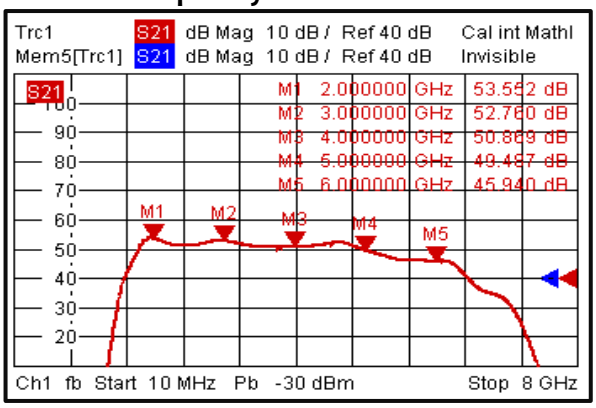
Proper electrostatic discharge (ESD) precautions are recommended to avoid performance degradation or loss of functionality.

What is not covered with warranty?

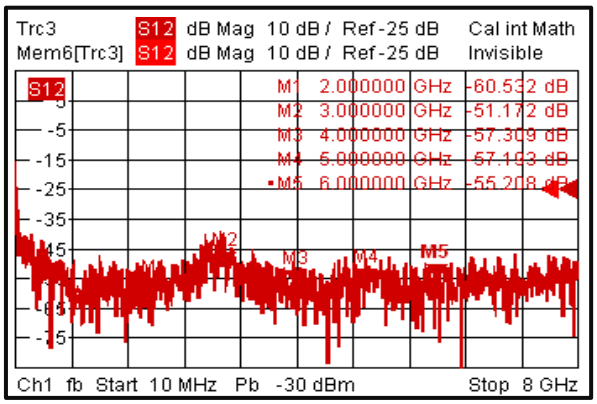
Each RF - Lambda amplifier will go through power and temperature stress testing.
Since the die, ICs or MMICs are fragile, these are not covered by warranty. Any damage to these will NOT be free to repair.

Typical Performance Plots

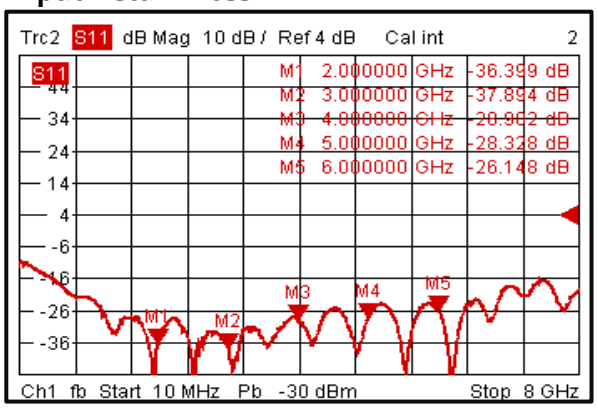
Gain vs. Frequency



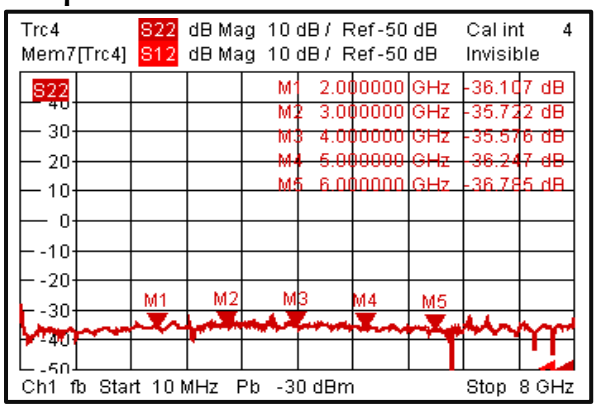
Isolation



Input Return Loss



Output Return Loss



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

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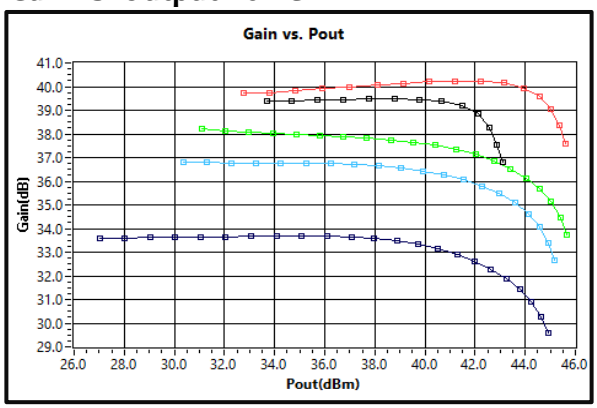
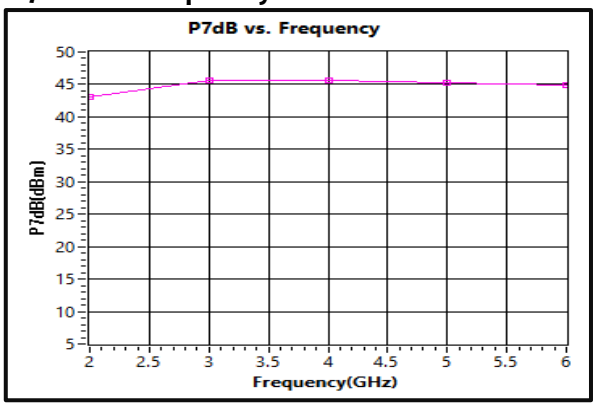
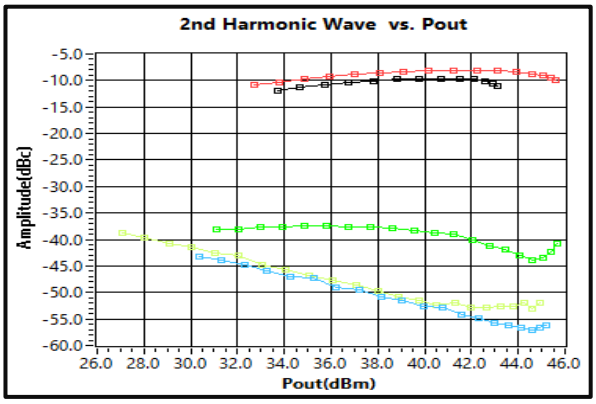
Gain vs. Output Power



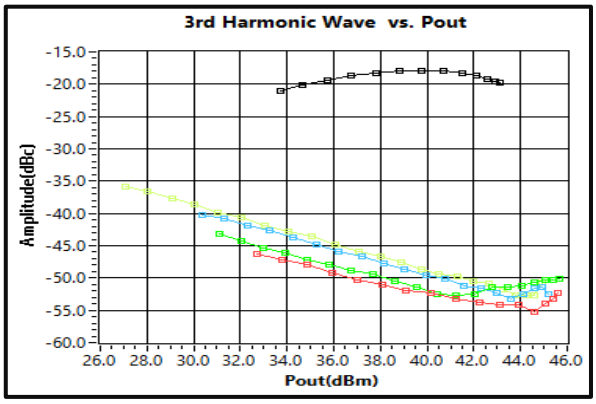
P7dB vs. Frequency



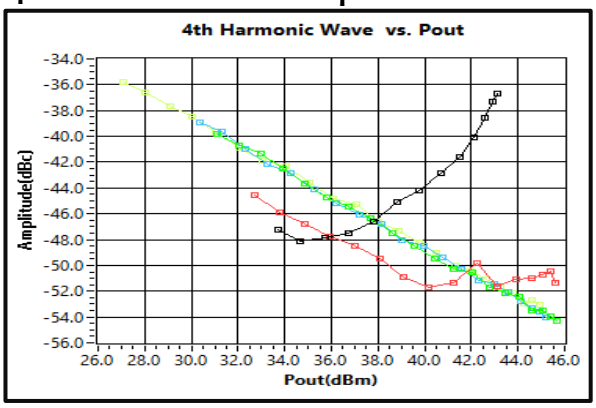
2nd Harmonic Wave Output Power



3rd Harmonic Wave Output Power



4th Harmonic Wave Output Power



10% Duty Cycle 200us Pulse Width

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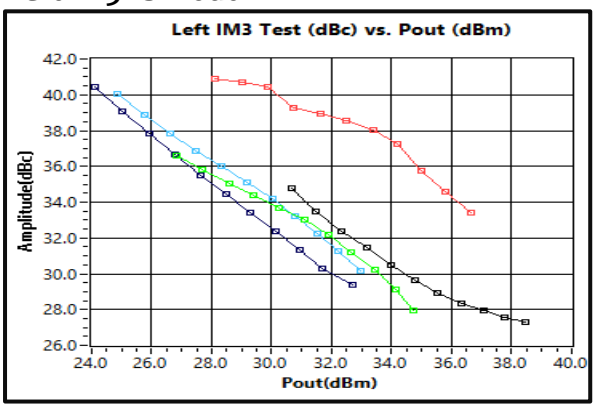
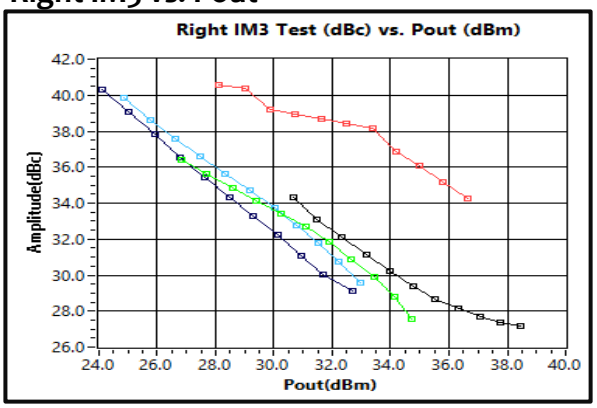
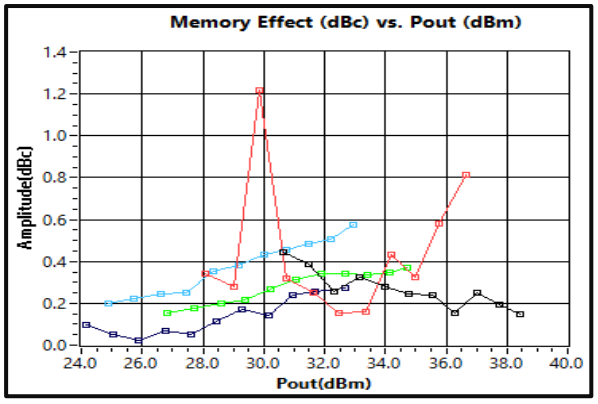
Left IM3 vs. Pout

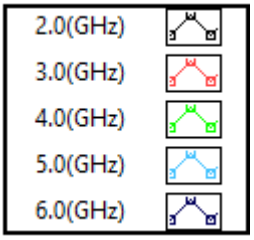


Right IM3 vs. Pout



Memory Effect vs. Pout





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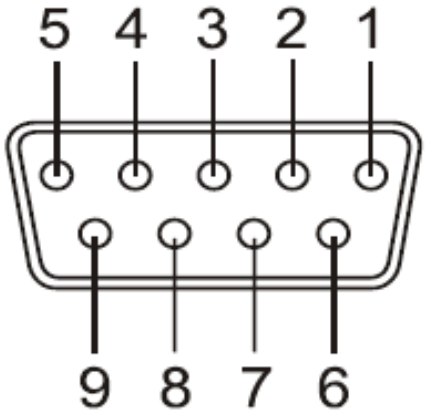
D-Sub 9 Pin

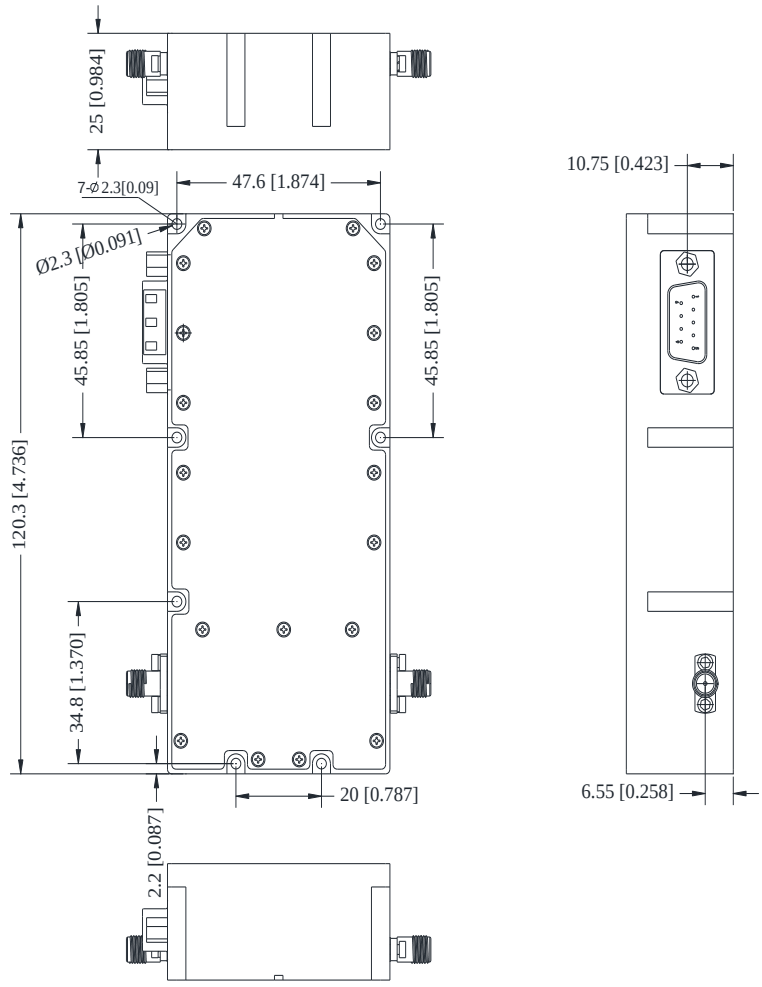


	Name	Function	Initial State	Description	Applied
Pin 1	NC	---	---	---	---
Pin 2	ID Over	Indicator	LOW	High TTL signal will indicate if the last stage of the amplifier is drawing too much current	Yes
Pin 3	ID Signal	Indicator	---	Analog voltage that represents the current being drawn from the last stage of the amplifier	Yes
Pin 4	VDC	---	---	VDC (must be able to support 5A) Both VDC pins must be tied together	Yes
Pin 5	VDC	---	---	VDC (must be able to support 5A) Both VDC pins must be tied together	Yes
Pin 6	RF Off	Control	LOW	Applying a TTL High signal to this pin will disable the RF signal	Yes
Pin 7	TEMP Signal	Indicator	---	Analog voltage that represents the case temperature of the amplifier	Yes
Pin 8	GND	---	---	GND (must be able to support 5A) Both GND pins must be tied together	Yes
Pin 9	GND	---	---	GND (must be able to support 5A) Both GND pins must be tied together	Yes

HIGH/LOW voltages are standard TTL signals:
0.0V-0.8V = LOW
2V-5V = HIGH

Outline Drawing:

All Dimensions in mm



Heat Sink and cooling fan required during operation

Important Notice

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RF-LAMBDA USA www.rflambda.com
Sales: sales@rflambda.com Technical : support@rflambda.com