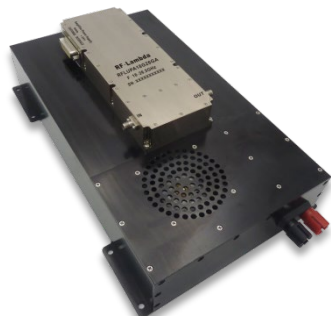


Ultra Wide Band Power Amplifier 0.2GHz-2.5GHz



Note: The photo is for illustration purposes only.
Please refer to the outline drawing

Product Description

The RFLUPA0225G100A is a wideband power amplifier with a frequency range of 0.2 to 2.5GHz.

The power output of this amplifier is 48dBm typical. The typical small signal gain is 55dB with a gain flatness of ± 3.5 dB. This performance is achieved through the use of GaN devices. This power amplifier works with a +36 VDC power supply.

The power amplifier's input and output connector is SMA-female. The operating temperature of this product is -40 to +70°C.

Features

- Ultra Wide band Power Amplifier
- Small Signal Gain 55dB Typical
- Output Saturation Power 50dBm Typical
- Supply Voltage +36 VDC
- 50 Ohm Matched Input/Output
- Overvoltage Protection
- Overcurrent Protection

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)

Parameter	Min	Typ	Max	Units
Frequency Range		0.2 – 2.5		GHz
Small Signal Gain		55		dB
Gain Flatness		+/-3.5		dB
Gain Variation Over Temperature (-40°C to +70°C)		+/-5		dB
Input Return Loss		-10		dB
Output 1dB Compression Point (P1dB)	44	45		dBm
Saturated Output Power (Psat)	46	48		dBm
Supply Current (Output Power @ Psat)		8		A
IM3		-28		dBc
RF ON and OFF Speed		80		us
Power Added Efficiency (PAE)		30		%
Time Division Duplexing (TDD) Blanking	ON	20		us
	OFF	200		us
Weight		45		lbs.
Impedance		50		Ohms
Input / Output Connectors	SMA-Female			
Package	Epoxy Sealed (Standard)			
	Hermetically Sealed (Optional)			

Absolute Maximum Ratings

Parameter	Rating
Supply Voltage Range	+34 VDC to +38 VDC
*RF Input Power (RFIN)	Psat – Large Signal Gain

Bias Up Procedure

1. Connect ground
2. Connect input and output with 50 Ohm source/load.
(In band VSWR < 1.9:1 or >10dB return loss.)
3. Connect +36 VDC and make sure power supply can handle max current.

Bias Down Procedure

1. Turn off +36 VDC
2. Remove +36 VDC Connection
3. Remove RF Connection
4. Remove ground

Environmental Specifications and Test Standards

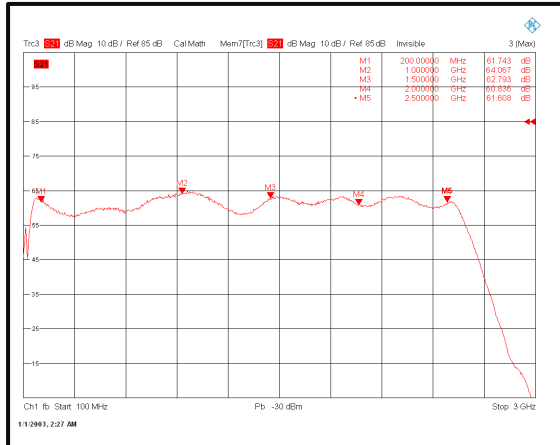
Parameter	Description
Operational Temperature	-40°C to +70°C (Case Temperature)
Storage Temperature	-55°C to +125°C
Thermal Shock	-40°C → +70°C (5 Cycles / 10 hours)
**Random Vibration	MIL-STD-202G Table 214-I, Test Condition Letter C 1.5 Hours Per Axis
High Temperature Burn In	Temperature +85°C for 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)

*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.

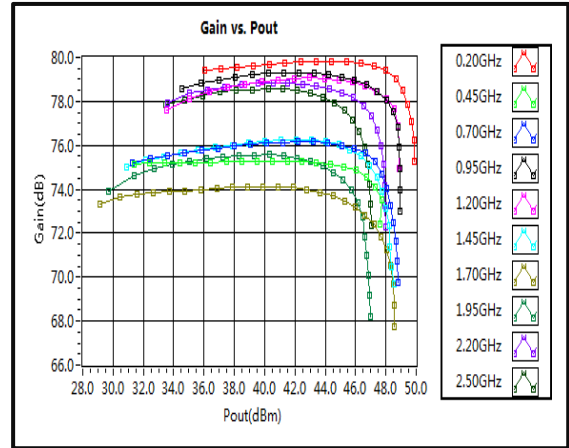
Typical Performance Plots

Gain vs. Frequency

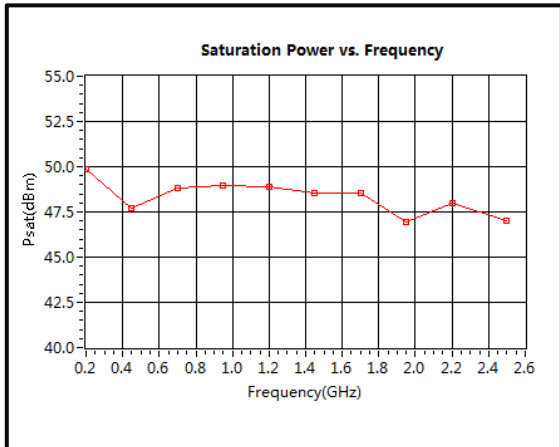


Note: Small signal VNA measurements include attenuators to protect equipment

Gain vs. Pout

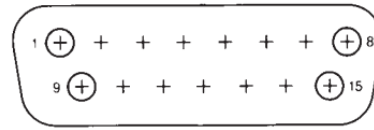


Peak Saturation Power vs. Frequency



Protection Connector Table

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



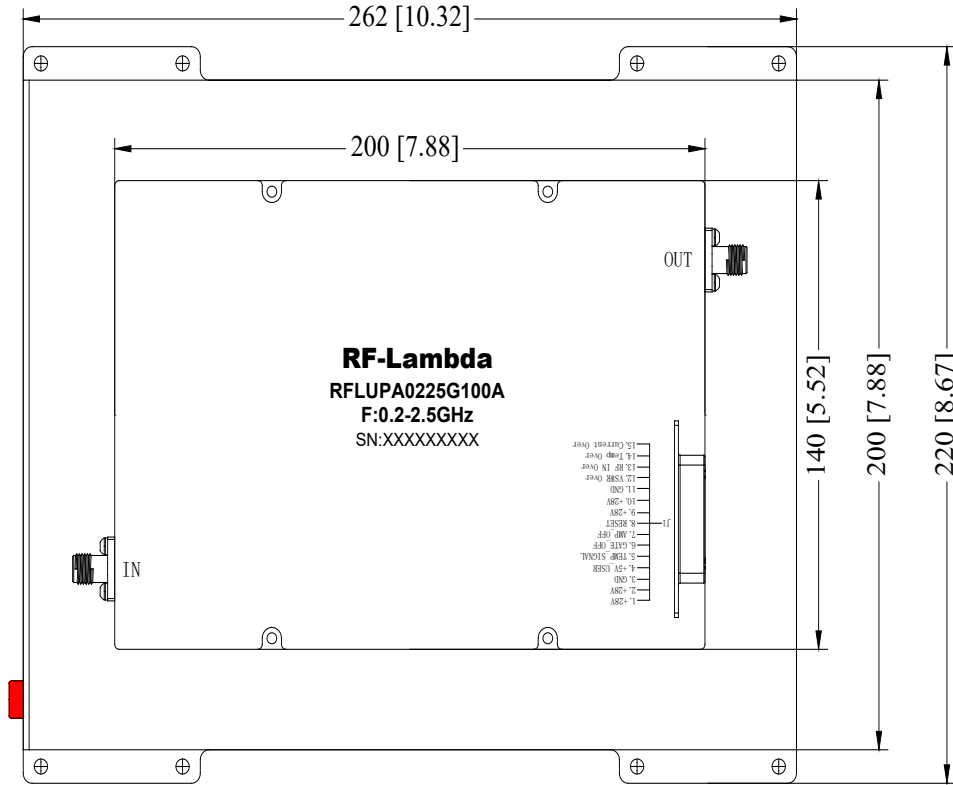
Pin #	Name	Function	Initial State	Description	Applied
1,2,9,10	VDD	Power Supply	+36V	+36 VDC is supply Voltage Resets PA when logic <u>LOW</u> is applied and released	Yes
3,11	GND	Ground	GND	Ground	Yes
4	+5V	Power Supply	+5V	+5V DC is supplied for reference	Yes
5	VSWR	Indicator	LOW	Pin will be latched to logic <u>HIGH</u> when output reflection is over limit	Yes
6	Gate Disable	Control	LOW	Applying logic <u>HIGH</u> disables gates of amplifiers	Yes
7	PA Off Alarm	Indicator	LOW	Pin will be latched to logic <u>HIGH</u> when any of the protection limit is reached	Yes
8	Reset	Control	HIGH	Resets PA when logic <u>LOW</u> is applied and released	Yes
12	RF Switch	Control	HIGH	Applying logic LOW switches off the RF signal	Yes
13	RF IN Over	Indicator	LOW	Pin will be latched to logic <u>HIGH</u> when input signal is over limit	Yes
14	Temp Over	Indicator	LOW	Pin will be latched to logic <u>HIGH</u> when amplifier is driven over temperature	Yes
15	Current Over	Indicator	LOW	Pin will be latched to logic <u>HIGH</u> when drain current limit is reached	Yes

Notes:

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

All dimensions are in millimeters [inches]



Ordering Information

Part Number	Modification	Description
RFLUPA0225G100A	Standard	0.2GHz-2.5GHz 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.

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