

50W Broadband High Power Amplifier 20MHz-520MHz



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

Product Description

RFLUPA0052G50A is a broadband high power amplifier with a frequency range of 20 to 520MHz.

The power output of this amplifier is 50Watts. The typical gain is 47dB with a gain flatness of ± 2.5 dB. This power amplifier works with a +28VDC power supply.

The working temperature of this product is between - 20°C and +60°C.

Features

- Broadband High Power Amplifier
- Power Gain 47dB Typical
- RF Output Power 50W Typical
- Supply Voltage +28VDC
- 50 Ohm Matched Input / Output

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 ($T_A = +25^\circ\text{C}$)

Parameter	Min	Typ	Max	Units
Frequency Range	20		520	MHz
RF Output Power		50		W
Power Gain		47		dB
Small Gain Flatness		± 2.5		dB
Input Return Loss			-10	dB
Harmonics @30W		-10		dBc
Spurious Signals		-60		dBc
Operating Voltage	24	28	32	V
DC Current @50W		7		A
Weight		2.2		lbs.
Impedance		50		Ohms
Input / Output Connectors	SMA- Female(Input)-SMA-Female(Output)			
DC Interface Connector	D-Sub 9-Pin, Male			
Package	Epoxy Sealed (Standard)			
	Hermetically Sealed (Optional)			

Absolute Maximum Ratings

Parameter	Rating
Input RF drive level without damage	+10 dBm (Max)
Load VSWR @ POUT =25W	∞ @ all load phase & amplitude for duration of 1 minute ; 3:1 @ all load phase & amplitude continuous

Bias Up Procedure

1. Connect Ground Pin
2. Connect input and output
3. Connect +28V biasing

Bias Down Procedure

1. Turn off +28V biasing
2. Remove RF connection
3. Remove Ground.

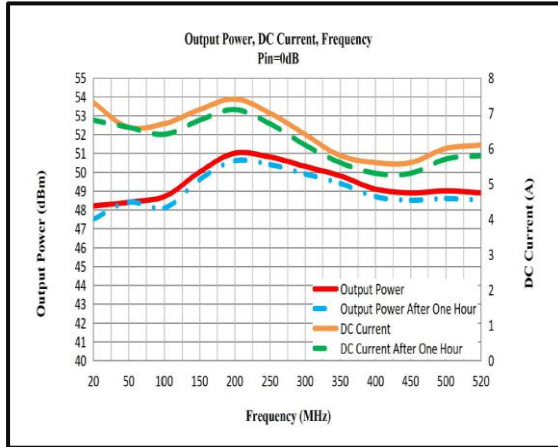
Environmental Specifications and Test Standards

Parameter	Description
Operational Temperature	-20°C to +60°C (Case Temperature)
Storage Temperature	-25°C to +65°C
Thermal Shock	-25°C → +65°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 +60°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)

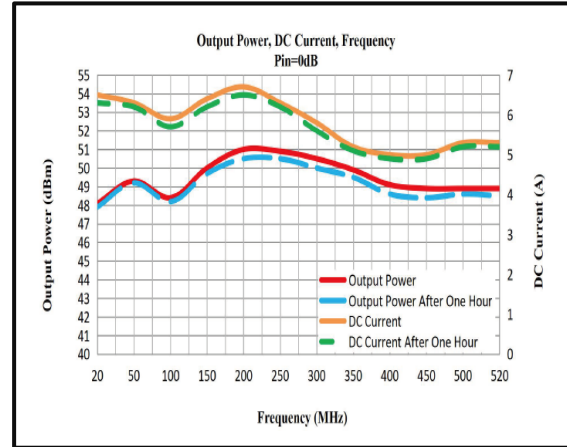
**For vibration testing details please see additional information section.

Typical Performance Plots

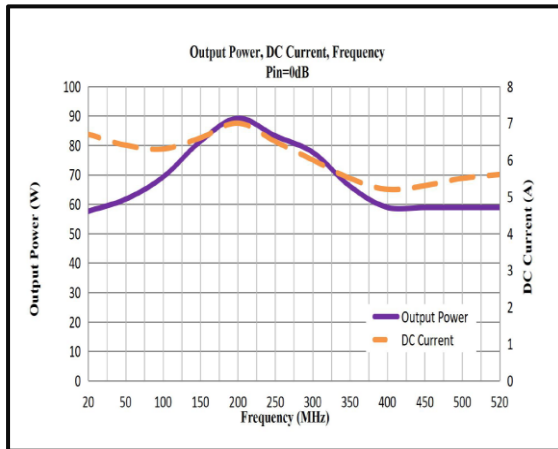
Output Power (Low temp. $-20 \pm 3^\circ\text{C}$)



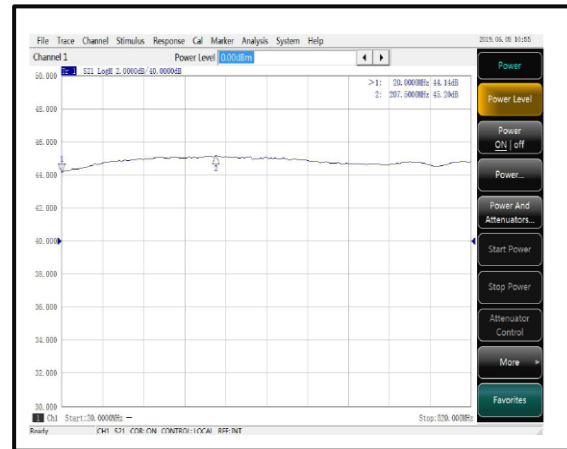
Output Power (High temp. $+60 \pm 3^\circ\text{C}$)



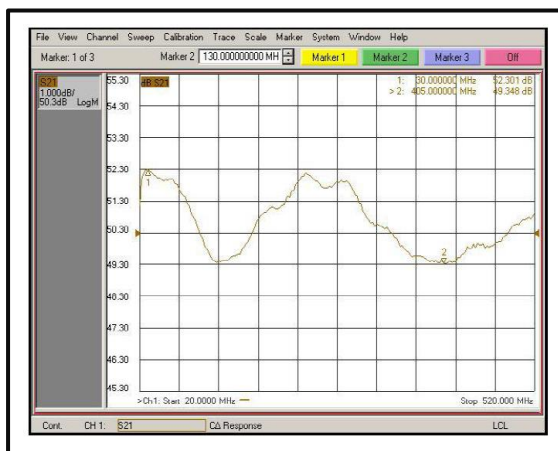
Output Power (Normal temp. $+25 \pm 3^\circ\text{C}$)



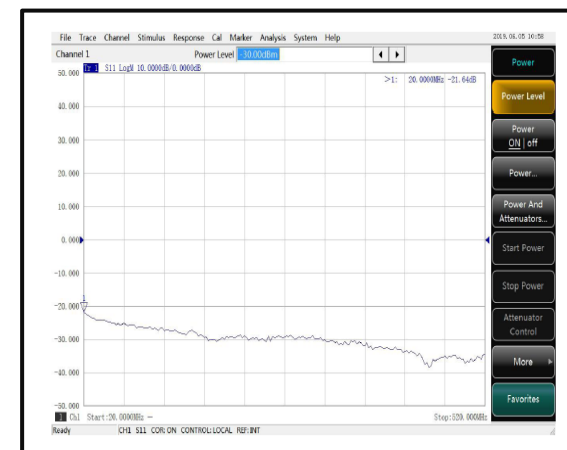
Power Gain



Small Gain Flatness



Input Return Loss

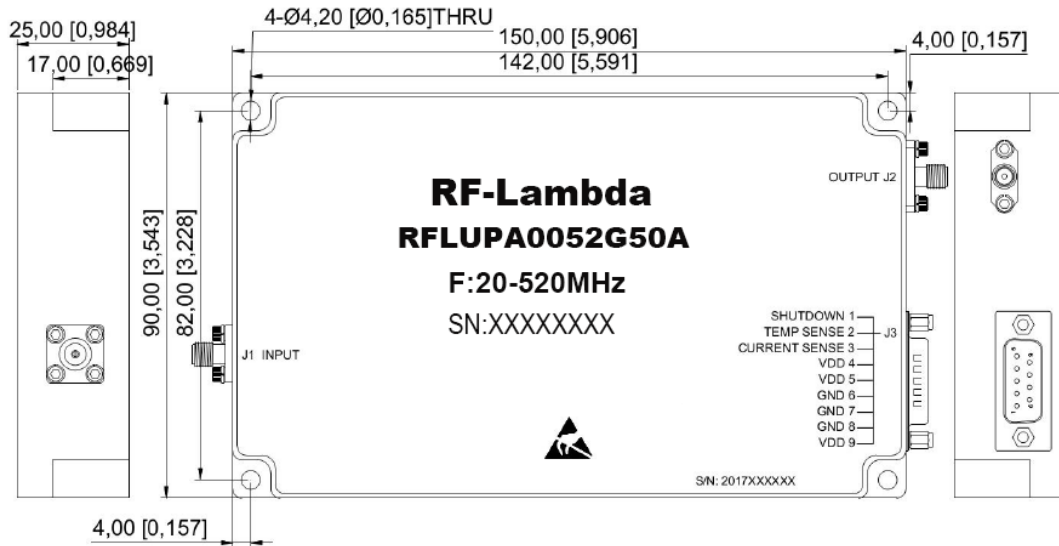


Note: Adequate heatsink required.

DC Interface Connector

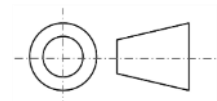
Pin #	Description	Specifications
1	SHUTDOWN	Amplifier Disable: TTL Logic High (3.3V) (Internally Pulled-Low)
2	TEMP SENSE	Analog voltage relative to Module's Temperature @ 10 mV/°C
3	CURRENT SENSE	Analog voltage relative to IDD @ 100mV per Ampere
4,5,9	VDD	28VDC
6,7,8	GND	Ground

Outline Drawing



Notes:

1. Package Material: Aluminum or Copper
2. Finish: Nickel Plated
3. All dimensions are in millimeters [inches].
4. Housing Tolerances $\pm 0.2[0.008]$ unless otherwise specified(Excl Heat Sink).
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.
6. Standard torque wrench must be used to secure RF connectors.



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
RFLUPA0052G50A	Standard	20MHz-520MHz 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.

Important Notice

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