

Wide Band Power Amplifier 0.2GHz-22GHz

Product Description

RFLUPA20M22GA is an ultra wideband power amplifier with a frequency range of 0.2 to 22GHz.

The power output of this amplifier is 33.0dBm typical. The typical small signal gain is 26.5dB with a gain flatness of ± 1.5 dB. This power amplifier works with a +28VDC power supply.

The working temperature of this product is between - 40°C and + 85°C.

Features

- Wide band Power Amplifier
- Small Signal Gain 26.5dB Typical
- Output Saturation Power 33.0dBm Typical
- High P1dB +28.0dBm Full Band
- 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°C)

Parameter	Min	Typ	Max	Units
Frequency Range	0.2		22	GHz
Gain		26.5		dB
Gain Flatness		± 1.5		dB
Gain Variation Over Temperature (-40°C to +85°C)		± 1.5		dB
Input VSWR		2.0		:1
Output Power for 1 dB Compression (P1dB)		28.0		dBm
Saturated Output Power (Psat)		33.0		dBm
IM3		/		dBc
Isolation S12		-50		dB
Supply Current(VCC=+28V)		1300		mA
Efficiency at P1dB		/		%
Weight		/		lbs.
Impedance		50		Ohms
Input / Output Connectors	2.92mm- Female(Input) - 2.92mm- Female(Output)			
Package	Epoxy Sealed (Standard)			
	Hermetically Sealed (Optional)			

Absolute Maximum Ratings

Parameter	Rating
Operating Voltage	+30.8V
*RF Input Power (RFIN)	+10dBm

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 positive supply and make sure power supply can handle max current.

Bias Down Procedure

1. Turn off power supply
2. Remove positive supply Connection
3. Remove RF Connection
4. Remove ground

Environmental Specifications and Test Standards

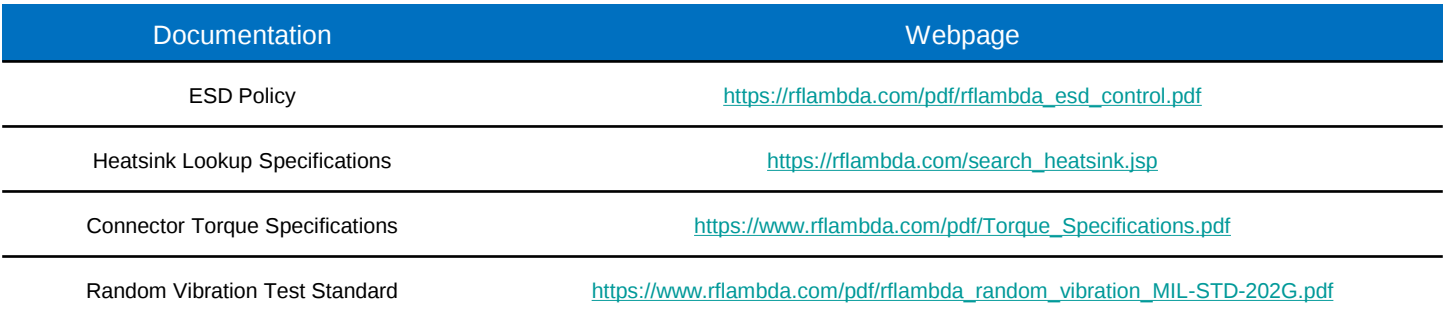
Parameter	Description
Operational Temperature	-40°C to +85°C (Case Temperature)
Storage Temperature	-50°C to +105°C
Thermal Shock	-40°C → +85°C (5 Cycles / 10 hours)
**Random Vibration	MIL-STD-202G Table 214-I, Test Condition Letter C 1.5 Hours Per Axis
High Temperature Burn In	Temperature +85°C for 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)

*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.

The figure contains three mechanical drawings of the PCB:

- Top Left Drawing:** A detailed top view of the PCB. It shows a rectangular board with dimensions 68 [2.68] mm by 68 [2.68] mm. Key features include:
 - A central square area with side lengths of 36 [1.42] mm.
 - Four mounting holes at the corners, labeled "4- $\varnothing$ 3.4[0.13] THRU".
 - Four tapped holes along the perimeter, labeled "4-M3 Deep6[0.24] Tapped hole".
 - Dimensions for various offsets: 19.6 [0.77] mm from the top edge to the first row of holes; 10.9 [0.43] mm between the VD and GND pads; 15.5 [0.61] mm from the bottom edge to the IN pad; 62 [2.44] mm between the IN and OUT pads; and 5.7 [0.22] mm and 11.7 [0.46] mm from the right edge to the output connector.
 - Labels for "VD", "GND", "IN", and "OUT" pads are present.
- Top Right Drawing:** A side view of the PCB assembly. It shows the total height of 108 [4.25] mm. The label "Including Heat sink" points to the top section. The width remains 68 [2.68] mm.
- Bottom Drawing:** A cross-sectional view of the PCB. It shows the thickness of the board as 25 [0.98] mm and the overall width as 36.7 [1.44] mm.



Ordering Information

Part Number	Modification	Description
RFLUPA20M22GA	Standard	0.2GHz-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 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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