

11W Wide Band Solid State Power Amplifier 0.03GHz-3GHz



Note: Photo is for illustration purposes only.
Please refer to outline drawing.

Features

- Wideband Power Amplifier
- Small Signal Gain 47dB Typical
- Output Saturation Power 40.5dBm Typical
- Supply Voltage +36VDC
- 50 Ohm Matched Input/Output

Product Description

RFLUPA0103GA-WP is a wide band solid state power amplifier with protection with a frequency range of 0.03 to 3GHz.

The power output of this amplifier is 40.5dBm typical. The typical small signal gain is 47dB with a flatness of ± 2.5 dB. This power amplifier works with a +36 VDC power supply.

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

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 ($T_A=+25^\circ\text{C}$), $V_{CC}=+36\text{VDC}$

Parameter		Min	Typ	Max	Units
Frequency Range		0.03		3.0	GHz
Gain		40	47		dB
Gain Flatness			±2.5		dB
Gain Variation Over Temperature (-40°C to +85°C)			±3.0		dB
Input VSWR			1.5		:1
Output Power for 1 dB Compression (P1dB)			36		dBm
Saturated Output Power (Psat)		39	40.5		dBm
Isolation S12			-55		dB
DC Current (Vcc=+36V) at Pout=Psat			0.75	1.5	A
Efficiency at Psat			20		%
Turn On/Off Speed (Switch Disable)	ON		150		ns
	OFF		200		ns
Turn On/Off Speed (AMP Disable)	ON		50		us
	OFF		100		us
Turn On/Off Speed (Gate Disable)	ON		500		us
	OFF		50		us
Weight			0.81 Max.		lbs.
Impedance			50		Ohms
Input / Output Connectors			SMA- Female		
Package	Epoxy Sealed (Standard)				
	Hermetically Sealed (Optional)				

Absolute Maximum Ratings

Parameter	Rating
Operating Voltage	+38V
*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 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

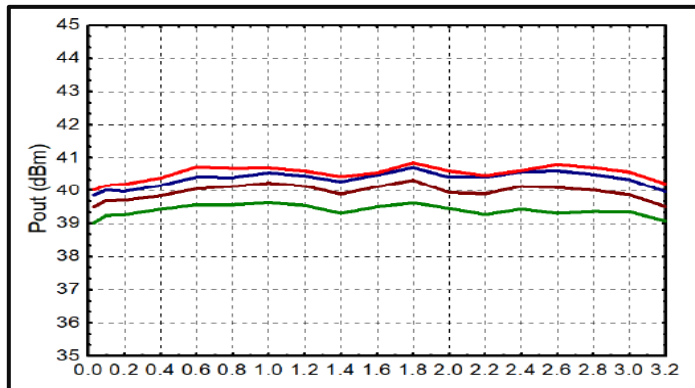
Parameter	Description
Operational Temperature	-40°C to +85°C (Case Temperature)
Storage Temperature	-50°C to +105°C
Thermal Shock	-40°C → +85°C (5 Cycles / 10 hours)
**Random Vibration	MIL-STD-202G Table 214-I, Test Condition Letter C 1.5 Hours Per Axis
High Temperature Burn In	Temperature +85°C for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

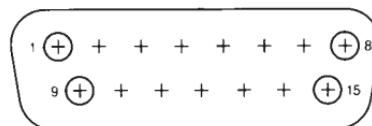
Typical Performance Plots

PndB vs. Frequency CW



Interface Connector

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

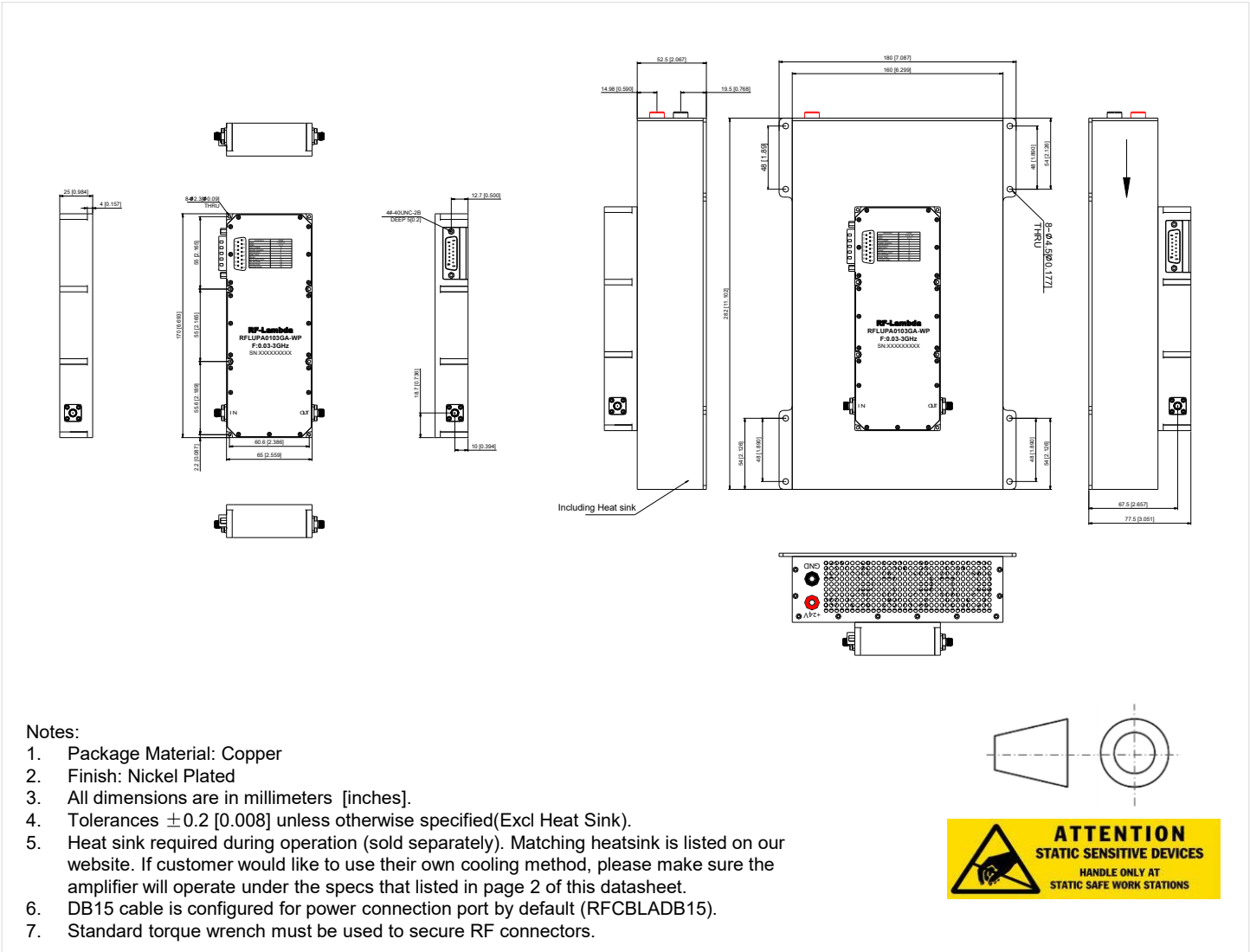


Pin #	Name	Function	Initial State	Description	Applied
1,2,9,10	VDD	Power Supply	+36V	+36V DC is supply Voltage	Yes
3,11	GND	Ground	GND	Ground	Yes
4	+5V_USER	Power Supply	+5V	+5V DC is supplied for reference(200mA)	Yes
5	TEMP_SIGNAL	Indicator	Voltage	Display temperature signal	Yes
6	GATE_OFF	Control	LOW	Applying logic HIGH disables gates of amplifiers	Yes
7	AMP_OFF	Control	LOW	Applying logic HIGH disables Positive Supply Voltage of amplifiers	Yes
8	RESET	Control	HIGH	Resets PA when logic LOW is applied and released (Internally Pulled-High +5V)	Yes
12	RF_Switch_OFF	Control	HIGH	Applying logic LOW disconnect RF signal of amplifiers	Yes
13	RF IN Over	Indicator	LOW	Pin will be latched to logic HIGH when input signal is over limit	Yes
14	Temp Over	Indicator	LOW	Pin will be latched to logic HIGH when drive over Temperature	Yes
15	Current Over	Indicator	LOW	Pin will be latched to logic HIGH when Current Limit is reached	Yes

Notes:

- HIGH/LOW voltages are standard TTL signals 0V to 0.8V = LOW. 2.8V to 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 200mA.
- Indicator output signals can source 24mA.

Outline Drawing



Packing List

ID	Description	QTY
1	Fig a. DB15 cable (RFCBLADB15)	1
2	Fig b. Screws (#4-40*5+6)	2



Fig a.



Fig b.

Ordering Information

Part Number	Modification	Description
RFLUPA0103GA-WP	Standard	0.03GHz-3GHz 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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