

## Wideband Power Amplifier 27GHz-31GHz



Photo is only for illustration purposes only. Please refer to the outline drawing for dimensions.

### Features

- Wideband Solid State Power Amplifier
- Small Signal Gain 36dB Typical
- Output Saturation Power 42dBm Typical
- Supply Voltage +28VDC
- 50 Ohm Matched Input/Output
- Drain Overvoltage Protection
- Drain Overcurrent Protection

### Product Description

RFLUPA27G32GA2 is a wideband power amplifier with a frequency range of 27 to 31GHz.

The power output of this amplifier is 42dBm typical. The typical small signal gain is 36dB with a variance of  $\pm 5$ dB. This excellent performance is achieved through the use of GaN devices.

The power amplifier's input and output connectors are 2.92mm.

The operating temperature of this product is within -40 to +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 ( $T_A = +25^\circ\text{C}$ )

Parameter	Min	Typ	Max	Units
Frequency Range		27 – 31		GHz
Small Signal Gain		36		dB
Gain Variance		+/-5		dB
Gain Variation Over Temperature (-40°C to +70°C)		+/-3		dB
Input Return Loss		-15		dB
*Saturated Output Power (Psat)		42		dBm
Supply Current ( $V_{CC} = +28\text{VDC}$ )		2	5	A
Weight		1.15		lbs.
Impedance		50		Ohms
Input / Output Connectors		2.92mm Female		
Package		Screw Sealed (Standard)		
		Hermetically Sealed (Optional)		

Note: Special screening is available with extra cost. Please inquire with sales.

**Absolute Maximum Ratings**

Parameter	Rating
Supply Voltage Range	+30VDC
*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**

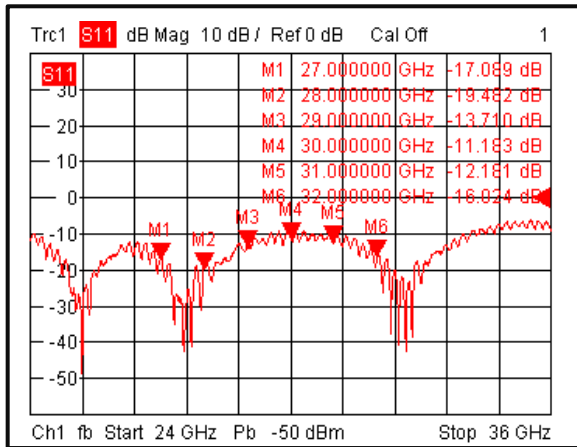
Parameter	Description
Operational Temperature	-40°C to +75°C (Case Temperature)
Storage Temperature	-55°C to +125°C
Thermal Shock	-40°C → +85°C (5 Cycles / 10 hours)
**Random Vibration	MIL-STD-202G Table 214-I, Test Condition Letter C 1.5 Hours Per Axis
High Temperature Burn In	Temperature +85°C for 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)

Notes:

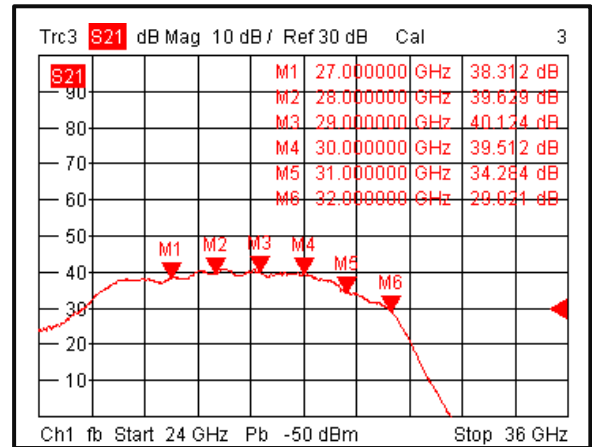
- Maximum RF input power is set to assure safety of amplifier. Input power may be increased at own risk to achieve full power of amplifier. Please reference gain and power curves.
- For vibration testing details please see additional information section

Typical Performance Plots

Input Return Loss vs Frequency @+25°C



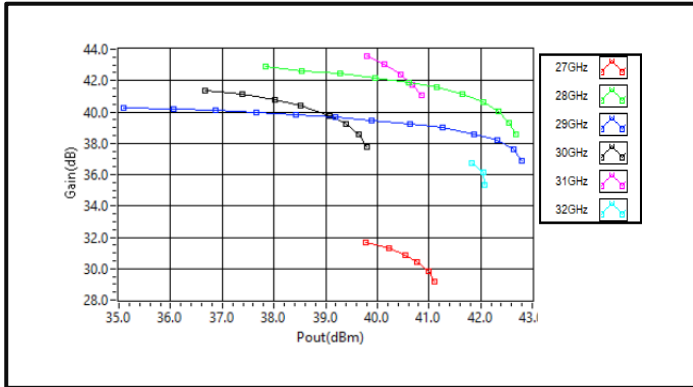
Gain vs Frequency @+25°C



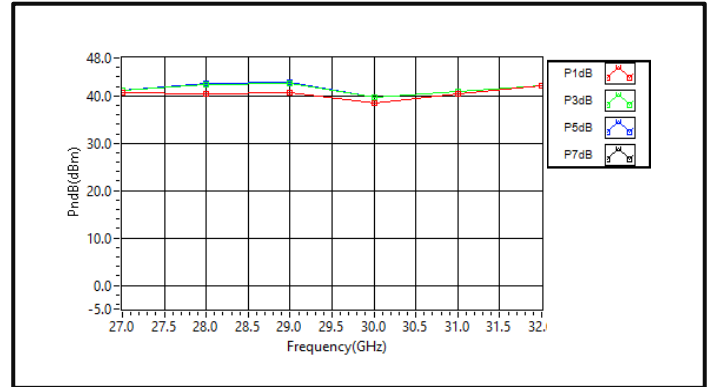
Note: Small signal VNA measurements include attenuators to protect equipment

Typical Performance Plots

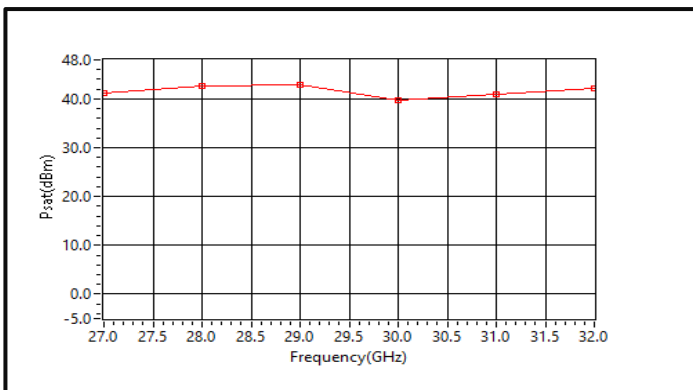
Gain vs Output Power \*Pulse



PxdB vs Frequency \*Pulse

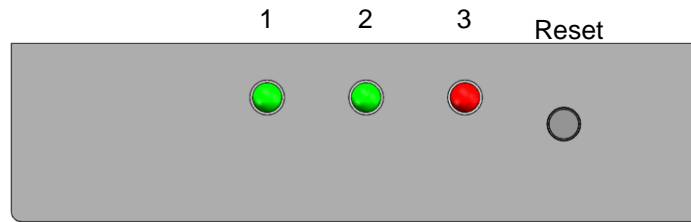


Psat vs Frequency Pulse



\*Pulse Psat power test signal: 200µs pulse width with 10% duty cycle.

**Alarm Status Panel**

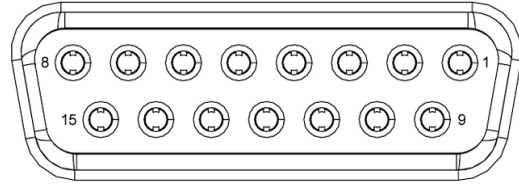


LED #	Name	Function	Initial State	Description	Applied
1	Temp	Indicator	Green	PA will shut down and latch this LED to a RED color when recommended case temperature is exceeded	Yes
2	ID	Indicator	Green	PA will shut down and latch this LED to a RED color when a drain current limit is exceeded	Yes
3	Power	Indicator	Red	LED will light to RED color when supply power is applied	Yes
	Reset*	Control		Manual reset button to reset PA	Yes

Note: LED needs to be manually reset to initial state by pressing RESET button

**Protection Connector Table**

Female D-Sub is on the housing  
The mating male part number: 172-E15-103R001

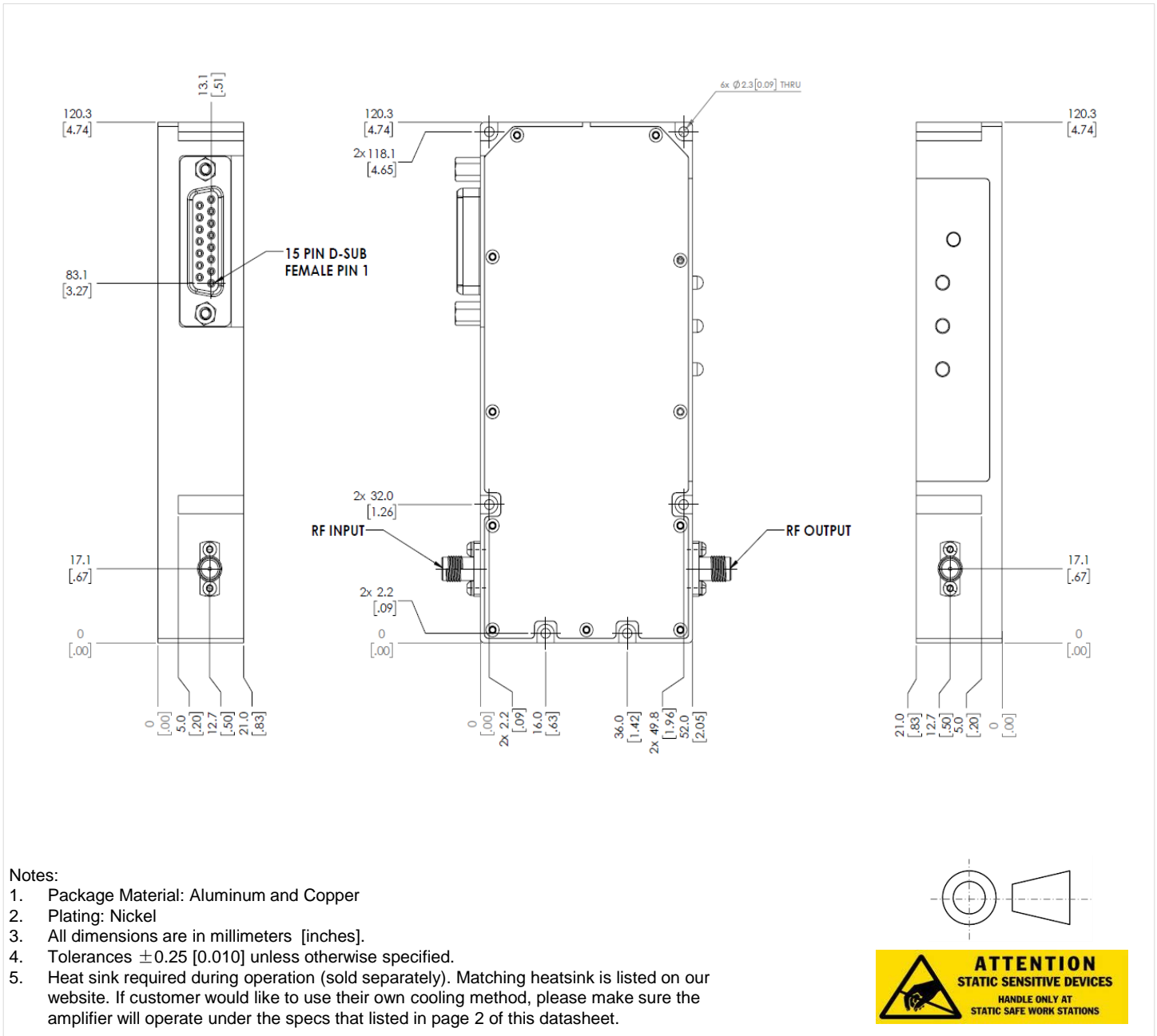


Pin #	Name	Function	Initial State	Description	Applied
1	Reset	Control	HIGH	Resets PA when logic <u>LOW</u> is applied and released	Yes
2	Drain Disable	Control	LOW	Applying logic <u>HIGH</u> disables drains of amplifiers	Yes
3	Gate Disable	Control	LOW	Applying logic <u>HIGH</u> disables gates of amplifiers	Yes
4	NC	NC	NA	NA	NA
5	Temp Over	Indicator	LOW	Pin will be latched to logic <u>HIGH</u> when amplifier is driven over temperature	Yes
6	Current Over	Indicator	LOW	Pin will be latched to logic <u>HIGH</u> when drain current limit is reached	Yes
7	NC	NC	NA	NA	NA
8	GND	Ground	NA	GND	Yes
9	VDC	VDC	NA	DC power supply pin for amplifier	Yes
10	VDC	VDC	NA	DC power supply pin for amplifier	Yes
11	ID Signal	Indicator	NA	Current provided to the drain of the last stage of the amplifier is represented by voltage	Yes
12	Temp Signal	Indicator	NA	PA carrier case temperature is represented by voltage	Yes
13	+5V User	Power Supply	+5V	+5V DC is supplied for reference	Yes
14	GND	Ground	GND	Ground	Yes
15	GND	Ground	GND	Ground	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**



**Additional Information**

Documentation	Webpage
ESD Policy	<a href="https://rflambda.com/pdf/rflambda_esd_control.pdf">https://rflambda.com/pdf/rflambda_esd_control.pdf</a>
Heatsink Lookup Specifications	<a href="https://rflambda.com/search_heatsink.jsp">https://rflambda.com/search_heatsink.jsp</a>
Connector Torque Specifications	<a href="https://www.rflambda.com/pdf/Torque_Specifications.pdf">https://www.rflambda.com/pdf/Torque_Specifications.pdf</a>
Random Vibration Test Standard	<a href="https://www.rflambda.com/pdf/rflambda_random_vibration_MIL-STD-202G.pdf">https://www.rflambda.com/pdf/rflambda_random_vibration_MIL-STD-202G.pdf</a>