

# NuWaves

## RF Solutions

### NuPower™ 12A01A

Linear L- & S-Band  
Solid State Power Amplifier



4 Watts Linear  
1.0 - 2.5 GHz

P/N: NW-PA-12A01A

**The NuPower™ 12A01A is a small, highly efficient solid state power amplifier that provides 4 watts of linear RF power to boost performance of data links and transmitters.**

Based on the latest gallium nitride (GaN) technology, NuPower's greater than 20% power efficiency and 3.9 in<sup>3</sup> form factor make it ideal for size, weight, and power-constrained broadband RF telemetry, tactical communication, and electronic warfare systems.

The NuPower 12A01A Power Amplifier accepts a nominal 0 dBm (1 mW) RF input and provides 36 dB of gain from 1.0 GHz to 2.5 GHz. This module handles both constant envelope and complex waveforms such as OFDM, QAM, DVB-T, etc.

NuPower PAs feature over-voltage protection and can operate over a wide temperature range of -40 °C to +85 °C (baseplate).

**Extend your operational communication range with NuPower™ amplifiers from NuWaves RF Solutions.**

### Features

- 4 Watts RF Output Power
- 1.0 GHz to 2.5 GHz
- Small Form Factor (3.00" x 2.00" x 0.65")
- High-Efficiency GaN Technology
- 0 dBm Nominal RF Input
- Over-Voltage Protection
- Reverse Voltage Protection
- Logic On/Off Control

### Benefits

- Extended Range
- Improved Link Margin
- Reduced load on DC power budget due to high efficiency operation
- Requires less volume on space-constrained platforms

### Applications

- Unmanned Aircraft Systems (UAS), Group 2 & 3
- Unmanned Ground Vehicles (UGV)
- Broadband RF Telemetry
- RF Communication Systems
- Software Defined Radios

# NuPower™ 12A01A Power Amplifier

## Specifications

### Absolute Maximums

Parameter	Rating	Unit
Max Device Voltage	32	V
Max Device Current	2.4	A
Max RF Input Power, $Z_L = 50 \Omega$	10	dBm
Max Operating Temperature	60	°C
Max Storage Temperature	85	°C

Export Classification
EAR99

### Electrical Specifications @ 28 VDC, 25 °C, $Z_S=Z_L=50 \Omega$

Parameter	Symbol	Min	Typ	Max	Unit	Condition
Operating Frequency	BW	1000		2500	MHz	
RF Output Power	$P_{SAT}$	4			W	0 dBm input
Output Power @ 1dB Compression	$P_{1dB}$				dBm	
Small Signal Gain	G		36		dB	
Small Signal Gain Flatness	$\Delta G$				dB	
Input VSWR	VSWR					
Nominal Input Drive Level	$P_{IN}$		0		dBm	
Operating Voltage	VDC	+26	28	+30	V	
Quiescent Current	$I_{DQ}$				A	
Operating Current	$I_{DD}$		0.7		A	@ 28 VDC (typ), $P_{in} = 0$ dBm
Module Efficiency					%	
Third Order Order Intercept Point	OIP3				dBm	Two tone test @ 1 MHz spacing, $P_{out} = 20$ dBm / tone)
Harmonics	2nd				dBc	
	3rd					
Output Mismatch (No Damage)				10:1		

# NuPower™ 12A01A Power Amplifier

## Specifications (cont.)

### Mechanical Specifications

Parameter	Value	Unit	Limits
Dimensions	3.00 x 2.00 x 0.65	in	Max
Weight	3	oz	Max
RF Connectors, Input/Output	SMA Female		
Interface Connector	Micro-D, 9-pin Socket		
Cooling	Adequate Heatsink Required		

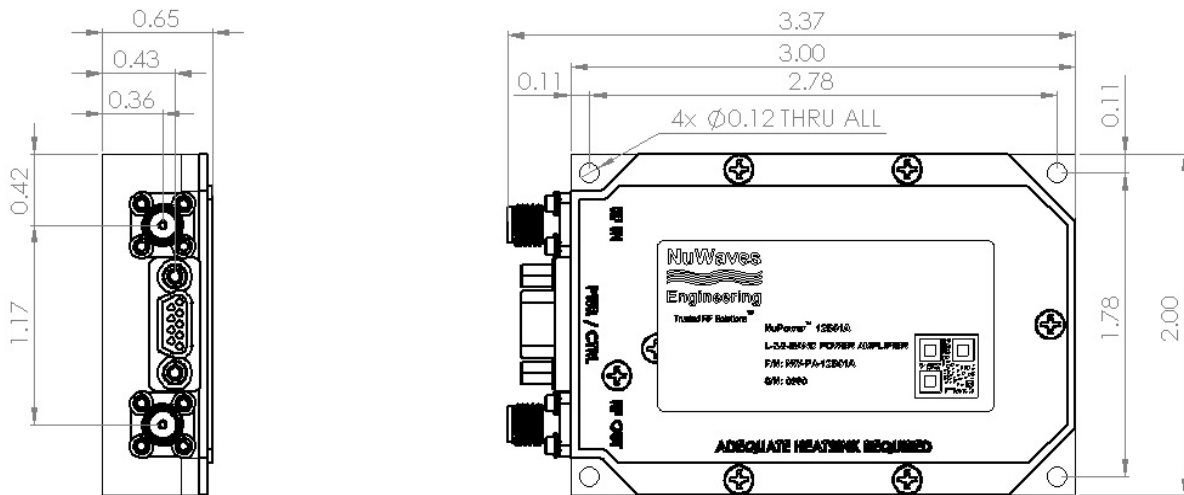
### Environmental Specifications

Parameter	Symbol	Min	Typ	Max	Unit
Operating Temperature (ambient)	$T_A$	-40		+60	°C
Operating Temperature (baseplate)	$T_C$	-40		+85	°C
Storage Temperature	$T_{STG}$	-55		+85	°C
Relative Humidity (non-condensing)	RH			95	%
Altitude MIL-STD-810F - Method 500.4	ALT			30,000	ft
Vibration / Shock Profile (Random profile in x,y, z axis, as per Figure for 15 minute duration in each axis)					

The graph shows a trapezoidal power spectral density profile. The y-axis is Power Spectral Density in  $g^2/Hz$  and the x-axis is Frequency in Hz. The profile is defined by the following points: (20, 0.01), (80, 0.04), (350, 0.04), and (2000, 0.01). The slope is +3 dB/octave from 20 Hz to 80 Hz, flat at 0.04  $g^2/Hz$  from 80 Hz to 350 Hz, and -3 dB/octave from 350 Hz to 2000 Hz.

# NuPower™ 12A01A Power Amplifier

## Mechanical Outline



## Accessory Part Numbers - Sold Separately

## Pinout

Part Number	Description
NW-PA-ACC-CB09MA	Standard Interface Cable Assembly - Flying Leads
NW-PA-ACC-CT09MA	Upgraded Interface Cable Assembly - Banana Plug Termination
HTSK-01	Heatsink with Integrated Fan

Function	Pin
28 Volts	1, 2
Ground	3, 4
RF Enable (GND to enable)	5
Over Temperature Flag (Low = temperature fault)	8
No Connect	6, 7, 9

For information on product disposal (end-of-life), please refer to this document: <https://nuwaves.com/wp-content/uploads/Product-Disposal-End-of-Life.pdf>

## Contact NuWaves



NuWaves RF Solutions  
132 Edison Drive  
Middletown, OH 45044

[www.nuwaves.com](http://www.nuwaves.com)  
[sales@nuwaves.com](mailto:sales@nuwaves.com)  
513.360.0800

