



Trusted 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

(Includes NW-PA-ACC-CB09MA interface cable)

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 in³ 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 Engineering.

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 | ΔG | | | | 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

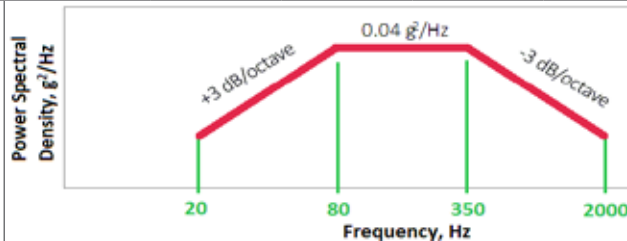
Specifications (cont.)

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 | External Heatsink (Optional) | | |

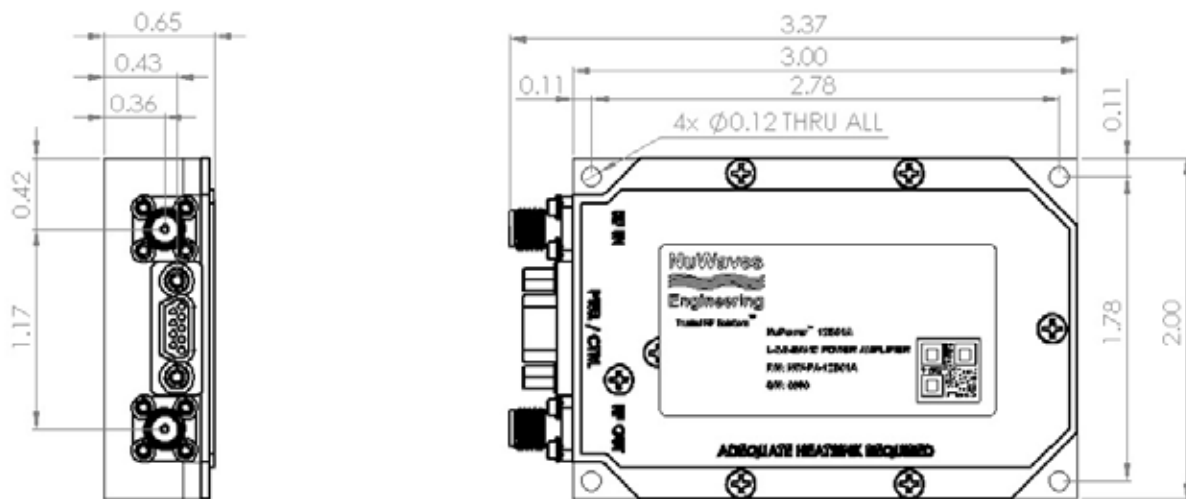
Environmental Specifications

| 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) | | | | | |



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Mechanical Outline



Accessory Part Numbers

| Part Number | Description |
|------------------|--|
| NW-PA-ACC-CB09MA | Standard Interface Cable Assembly - Flying Leads (included with module) |
| NW-PA-ACC-CT09MA | Upgraded Interface Cable Assembly - Banana Plug Termination |
| NW-PA-ACC-KT01 | Accessory Kit, which includes Fan-Cooled Heatsink and Upgraded Interface Cable |
| NW-PA-ACC-HS02 | Heatsink with Integrated Fan |

Pinout

| 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 |

Contact NuWaves



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