NuWaves RF Solutions

NuPower™ 11B02A-TAC

Mini Multi-Octave Power Amplifier w/ Integrated Heatsink

10 Watt CW
200 MHz - 2600 MHz



P/N: NW-PA-11B02A-TAC

(includes PA-CBL-05-F interface cable)

The NuWaves NuPower™ 11B02A-TAC is a fully integrated, miniature solid state power amplifier that provides ultra-wideband operation across multiple octaves from high VHF through S-band frequencies, and typically delivers 10 watts of RF power across the frequency range of 200 MHz to 2.6 GHz.

Based on the latest gallium nitride (GaN) technology, the NuPower 11B02A-TAC's 20 - 60% power efficiency and small form factor make it ideal for size, weight, and power-constrained (SWaP) broadband RF telemetry and tactical communication systems.

The NuPower 11B02A-TAC's rugged IP67-rated chassis with integrated heat sink allows the system integrator or operator to easily incorporate the unit into a platform operating in harsh environments with limited space, such as a tactical vehicle or manpack.

Extend your operational communication range with NuPower™ amplifiers from NuWaves Engineering.

Features

- 10 Watts RF Output Power (typ)
- 200 MHz to 2.6 GHz
- Integrated Heatsink
- IP67 Rated
- Locking RF Enable Switch
- LED Temp Fault Indicator
- High-Efficiency GaN Technology
- Over-Voltage Protection
- Reverse-Voltage Protection

Benefits

- Dust / Water Resistant
- High-Reliability
- Extended Range
- Improved Link Margin
- Unique connectors to prevent improper installation in the field
- Lessened load on DC power budget due to high efficiency operation
- Consumes less volume on space-constrained platforms

Applications

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

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NuPower™ 11B02A-TAC Power Amplifier

Specifications

Absolute Maximums

Parameter	Rating	Unit
Max Device Voltage	32	V
Max Device Current	2.0	A
Max RF Input Power, Z_L = 50 Ω, CW	10	dBm
Max Operating Temperature (ambient)	60	°C
Max Operating Temperature (baseplate)	85	°C
Max Storage Temperature	85	°C

Export Classification
EAR99

Electrical Specifications

@ 28 VDC, 25 °C, Z_S=Z_L=50 Ω, CW, 0 dBm Input Power (unless otherwise stated)

Parameter	Symbol	Min	Typ	Max	Unit	Condition
Operating Frequency	BW	200		2600	MHz	
RF Output Power	P_{SAT}	7	10*		W	
Output Power @ 1dB Compression	P1dB		26		dBm	200 MHz
			25			1400 MHz
			33			2600 MHz
Small Signal Gain	G		46		dB	200 MHz
			46			1400 MHz
			43			2600 MHz
Small Signal Gain Flatness	ΔG		± 4		dB	Pin = -30 dBm
Power Gain Flatness			± 4		dB	
Input VSWR	VSWR		2.1			
Nominal Input Drive Level	P_{IN}		0		dBm	
Operating Voltage	VDC	11	28	32	V	
Quiescent (no RF) Current	I_{DQ}		0.40		A	
Operating Current	I_{DD}		1.3		A	
Module Efficiency			33		%	
Switching Speed	$TX_{ON/OFF}$			30	µS	10% to 90%
Third Order Order Intercept Point (Two tone test at 1 MHz spacing, Pout = 20 dBm / tone)	OIP3		42		dBm	200 MHz
			44			1400 MHz
			41			2600 MHz
Harmonics	2nd		-10		dBc	
	3rd		-15			
Output Mismatch (No Damage)				10:1	Ψ	No damage at all phase angles

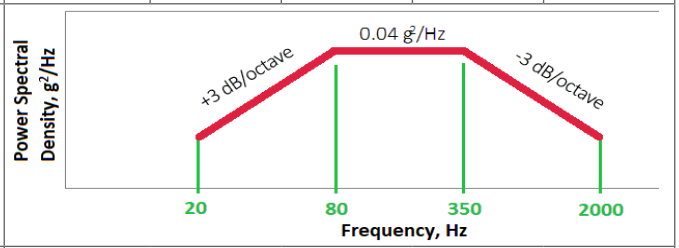
* The NuPower 11B02A-TAC typically provides 10 watts *minimum* RF output power across 200 MHz to 2.6 GHz with an input drive level of +3 dBm.

Specifications (cont.)

Mechanical Specifications

Parameter	Value	Unit	Limits
Dimensions	4.50 x 3.50 x 1.50	in	Max
Weight	20	oz	Max
RF Connectors, Input/Output	TNC Female / N Female		
Interface Connector	Bayonet, 3-pin Socket		
RF Enable Control	Toggle Switch, Locking		
Cooling	Integrated Heatsink		

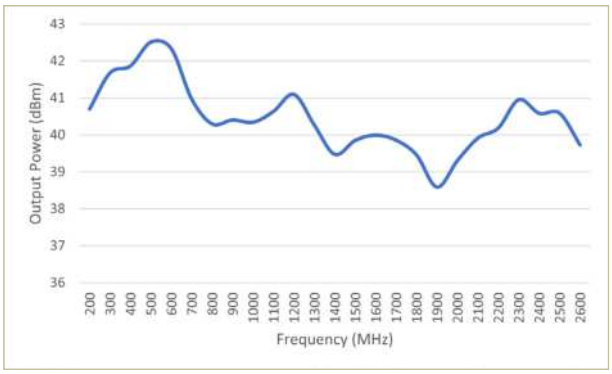
Environmental Specifications

Parameter	Symbol	Min	Typ	Max	Unit
Operating Temperature (ambient)	T_A	-40		+60	℃
Operating Temperature (baseplate)	T_C	-40		+85	℃
Storage Temperature	T_{STG}	-55		+85	℃
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)					
Environmental Rating	IP67 (dust and water protection)				

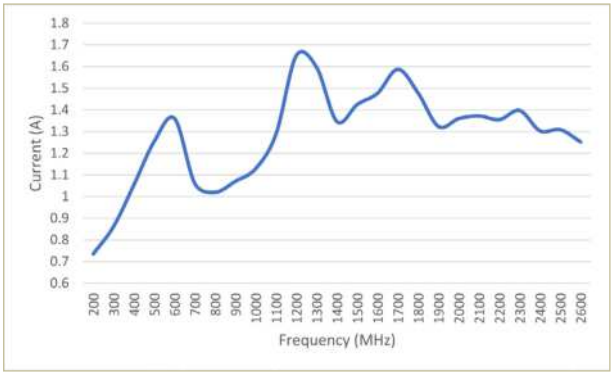
Performance Plots

Test Conditions: +28 VDC, +25 °C, Z_S=Z_L=50 Ω, CW, 0 dBm Input Power (unless otherwise stated)

RF Output Power



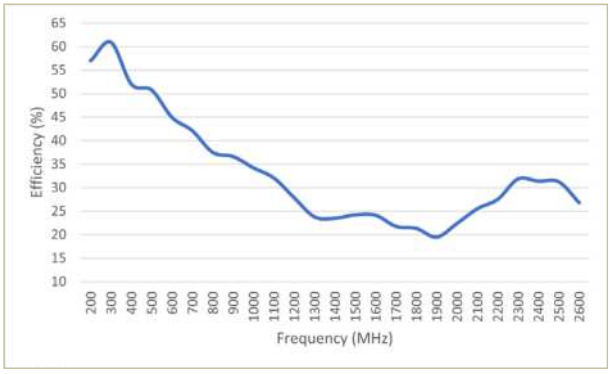
Current Consumption



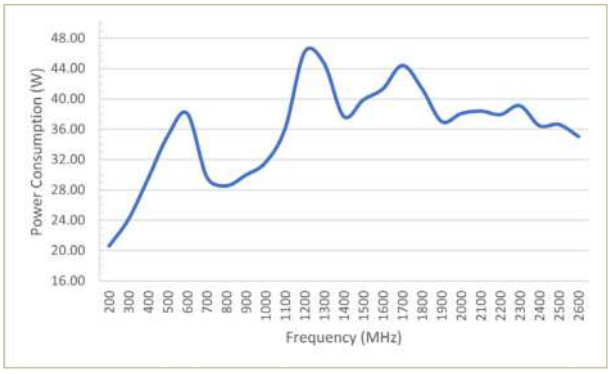
NuPower™ 11B02A-TAC Power Amplifier

Performance Plots (cont.)

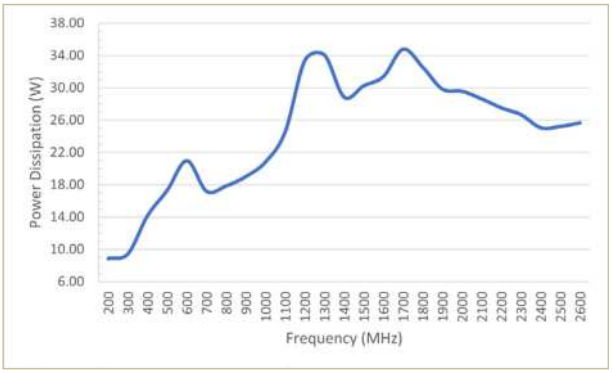
Efficiency



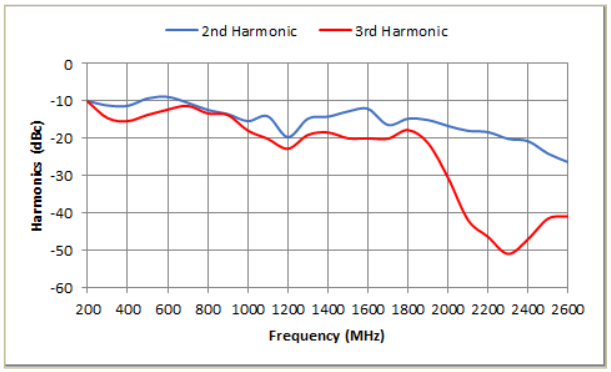
Power Consumption



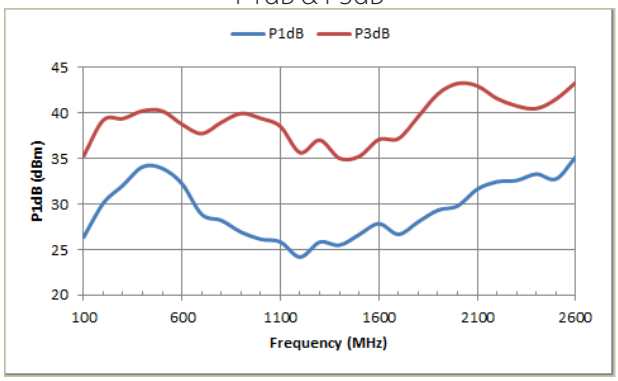
Power Dissipation



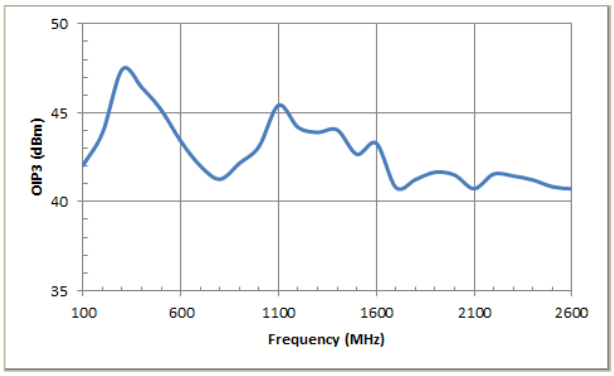
Harmonics (@ Psat)



P1dB & P3dB

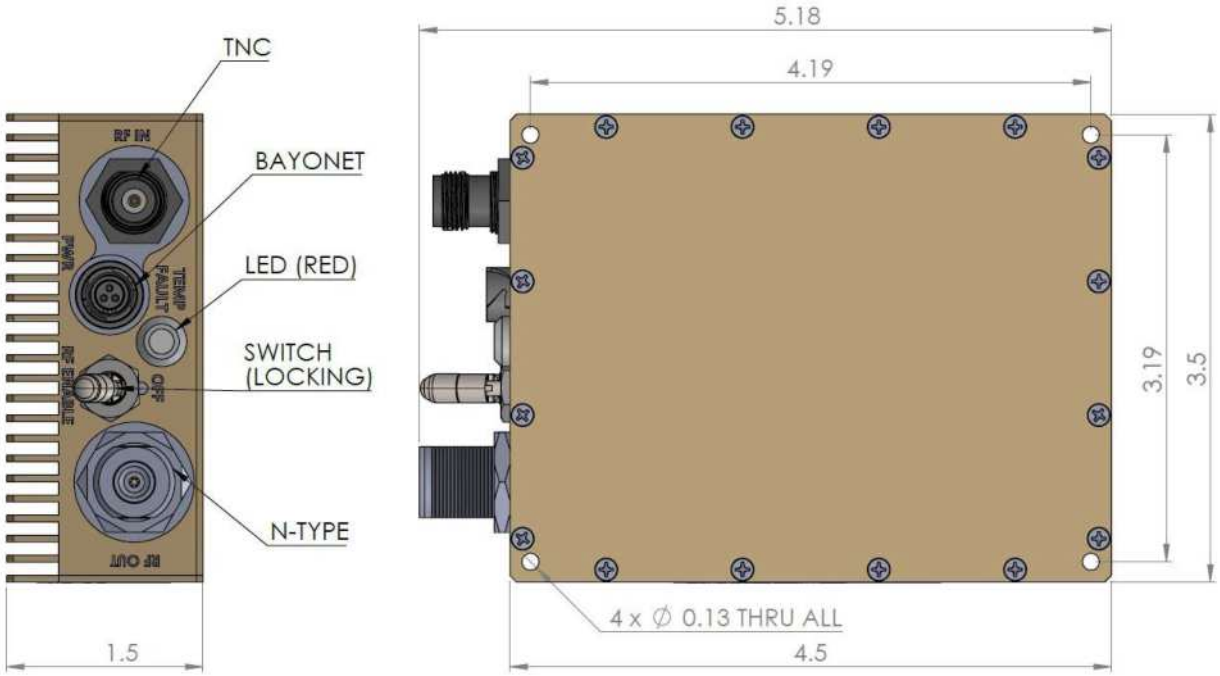


OIP3



NuPower™ 11B02A-TAC Power Amplifier

Mechanical Outline

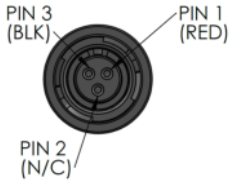


Accessory Part Numbers

Part Number	Description
NW-FL-05LPLE-2500-SFSF-M01	Harmonic Filter Module
PA-CBL-05-F	Standard Interface Cable Assembly - Flying Leads (included with module)
PA-CBL-05-B	Upgraded Interface Cable Assembly - Banana Plug Termination

Pinout

Function	I/O	Pin
DC Power (+11 to +32 VDC)	I	1
No Connect	I	2
Ground	-	3



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

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