



## NuPower™ S-75-C01-S01

75 Watt CW

2.2 GHz - 2.5 GHz

P/N: NW-PA-S-75-C01-S01

Contact [sales@nuwaves.com](mailto:sales@nuwaves.com) for custom options



**The NuPower™ S-75-C01-S01 is a low SWaP, 75W linear power amplifier, ideal for extending the range of datalinks and transmitters.**

Based on highly linear LDMOS technology, this amplifier is perfect for applications requiring both high data rates and high RF output power for long distance data links. It supports complex modulations with high peak-to-average ratios (PARs), where minimal signal distortion is required. Constant envelope signals such as CW, AM, and FM are also supported.

At a nominal +30dBm (1Watt) RF input, the amplifier provides 18dB of gain to achieve a nominal 50 Watts at each of the antenna ports. Each channel is its own independent bi-directional amplifier. The amplifier switches between transmit and receive through a DC control input. Alternatively, the module can be configured for Autosense where it switches between transmit and receive automatically based on the RF input power detected at the XCVR Port.

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

### Features

- 75 Watts (typ) RF Output Power
- 2.2 to 2.5 GHz
- Bidirectional Operation
- 18 dB (typ) of Transmit Gain
- 12 dB (typ) Receive Gain
- Fast T/R Mode Switching with Auto-Sensing or Manual T/R Line
- Small Form Factor
- Highly Linear LDMOS Technology
- Over-Voltage & Reverse-Voltage Protection

### Applications

- Unmanned Aircraft Systems (UAS) - Group 2 and Group 3
- Unmanned Ground Vehicles (UGV)
- Software Defined Radios
- Common Launch Tube (CLT)
- Air Launch Effect (ALE)
- Counter UAS Detection and Mitigation
- MIMO/MANET Radio Range Extension
- SISO Radio Range Extension

# NuPower™ NW-PA-S-75-C01-S01

## Specifications

### Absolute Maximums

Parameter	Rating	Unit
Max Device Voltage	N/A	V
Max Device Current	TBD	A
Max RF Input Power CW, $Z_L=50\Omega$	TBD	dBm
	TBD	
Max Operating Temperature (ambient)	+71 °C	°C
Max Operating Temperature (baseplate)	+85 °C	°C
Max Storage Temperature	+85 °C	°C

Export Classification
EAR 99

### Electrical Specifications @ 28 VDC, 25 °C, $Z_S=Z_L=50\Omega$ , CW, $P_{in} = +30$ dBm (unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit	Condition
Operating Frequency	BW	2200		2500	MHz	
RF Output Power, $P_{sat}$	$P_{sat}$		75		W	
Power Gain	G		18		dB	
Power Gain Flatness	$\Delta G$		$\pm 1.0$		dB	1-2.5 GHz
Output Power @ 1 dB Compression	P1dB		TBD		dBm	2200 MHz, @ 0 dBm Input
			TBD			2350 MHz, @ 0 dBm Input
			TBD			2500 MHz, @ 0 dBm Input
Small Signal Gain	G		TBD		dB	2200 MHz, @ 0 dBm Input
			TBD			2350 MHz, @ 0 dBm Input
			TBD			2500 MHz, @ 0 dBm Input
Small Signal Gain Flatness	$\Delta G$		TBD		dB	$P_{in} = 0$ dBm, 1-2.5 GHz
Harmonics	2nd		TBD		dBc	
	3rd		TBD			
Operating Voltage	VDC		28		V	
Module Efficiency			TBD		%	
Switching Speed	$T_{XON/OFF}$		1.0	2.0	$\mu s$	10% ctrl to 90% RF
Nominal Input Drive Level	$P_{IN}$		+30		dBm	
Quiescent Current	$I_{DQ}$		TBD		mA	T/R Enable Off (Receive Current)
Operating Current	$I_{TX}$		TBD	6.5A	A	
Input VSWR	VSWR		2:1			
Output Mismatch VSWR	VSWR		10:1 (TBR)		$\Psi$	No damage at all phase angles

# NuPower™ NW-PA-S-75-C01-S01

## Specifications (cont.)

### Mechanical Specifications

Parameter	Value	Unit	Limits
Dimensions	4.0 x 3.5 x 1.0	in	Max
Weight	TBD	oz	Max
RF Connectors, Input/Output	SMA		
Interface Connector	9-Pin Micro D		
Cooling	Adequate Heatsink Required		

### Environmental Specifications

Parameter	Symbol	Min	Typ	Max	Unit
Operating Temperature (ambient)	T <sub>A</sub>	-40		+71	°C
Operating Temperature (baseplate)	T <sub>C</sub>	-40		+85	°C
Storage Temperature	T <sub>STG</sub>	-55		+85	°C
Altitude	ALT		TBD	50,000	ft
Vibration / Shock Profile TBD			(Profile TBD)		

### EVM vs Output Power vs Modulation

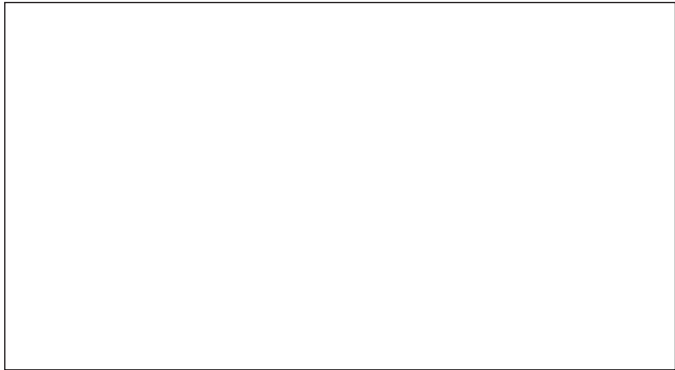
Modulation (802.11g, 20MHz BW, OFDM)	Date Rate	Output Power (W)	EVM (dB)	EVM (%)
64QAM	54 MBPS	10	≤ -27	≤ 4.46
16QAM	36 MBPS	20	≤ -21	≤ 8.91
QPSK	12 MBPS	35	≤ -15	≤ 17.78
BPSK	9 MBPS	50	≤ -7	≤ 44.66

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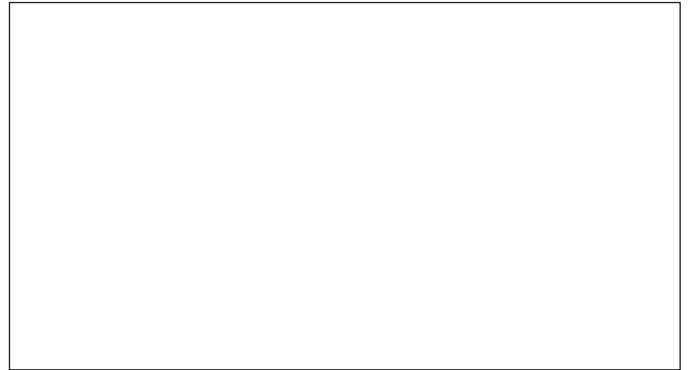
## Performance (to be provided soon)

Test Conditions: +28 VDC, +25 °C,  $Z_s=Z_L=50 \Omega$ , CW, +30 dBm Input Power (unless otherwise specified)

Output Power



Output Power - Stepped Input Power



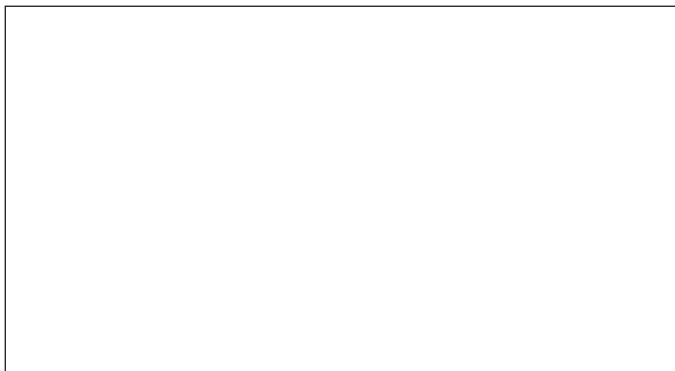
Output Power vs. Input Power



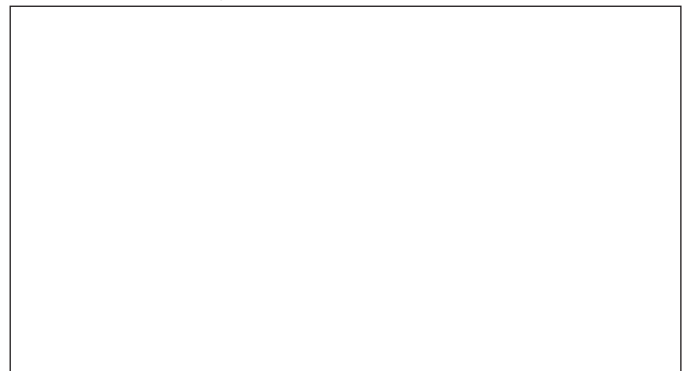
Output Power vs. Input Voltage



Current Consumption



Small Signal Gain [0dBm Input Power]



Efficiency



Efficiency vs. Output Power

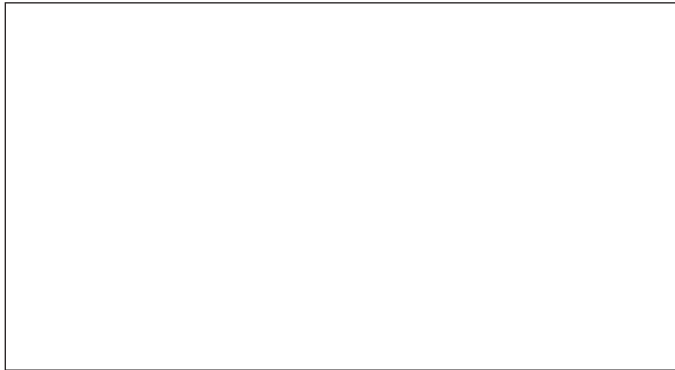


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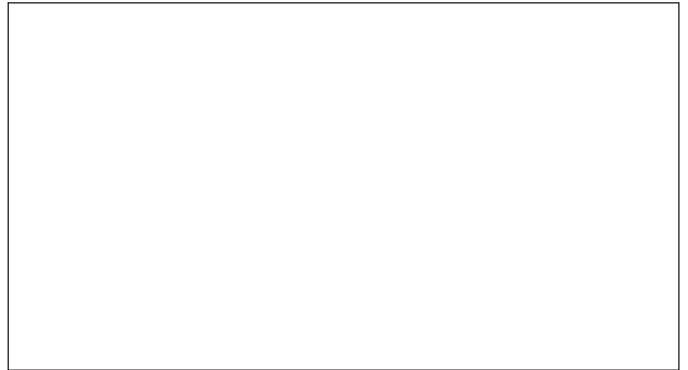
## Performance Plots (cont.)

Test Conditions: +28 VDC, +25 °C,  $Z_s=Z_L=50 \Omega$ , CW, +30 dBm Input Power (unless otherwise specified)

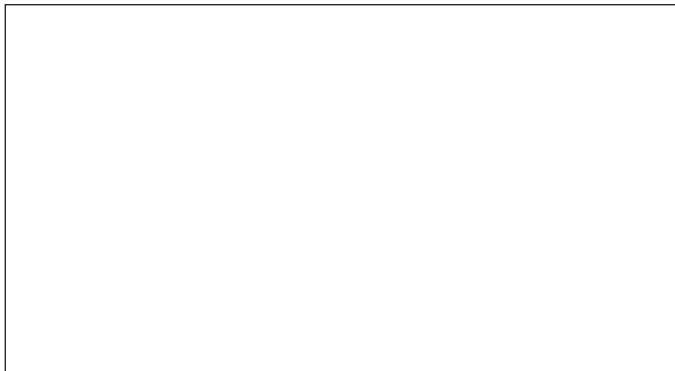
Input VSWR



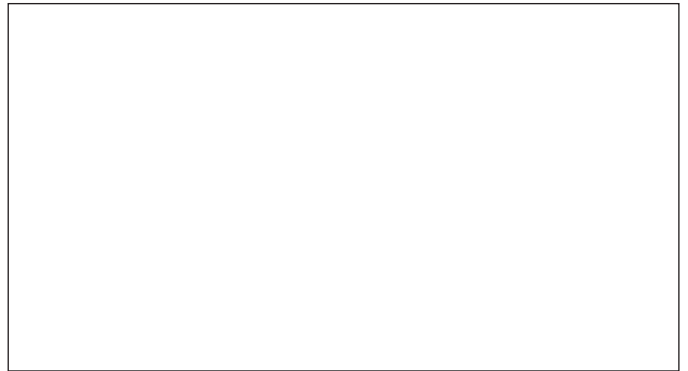
Harmonics



P1dB & P3dB



EVM vs. Output Power [BPSK (OFDM)]



EVM vs. Output Power [QPSK (OFDM)]



EVM vs. Output Power [16QAM (OFDM)]

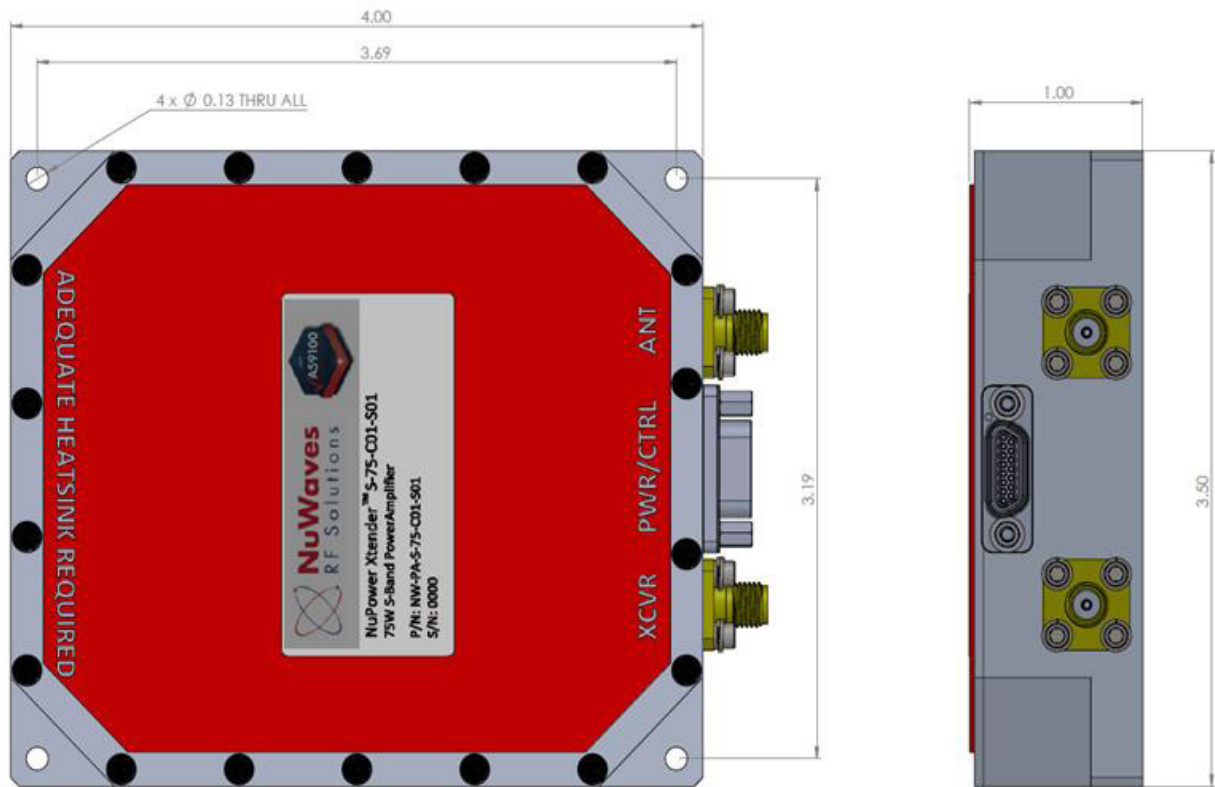


EVM vs. Output Power [64QAM (OFDM)]



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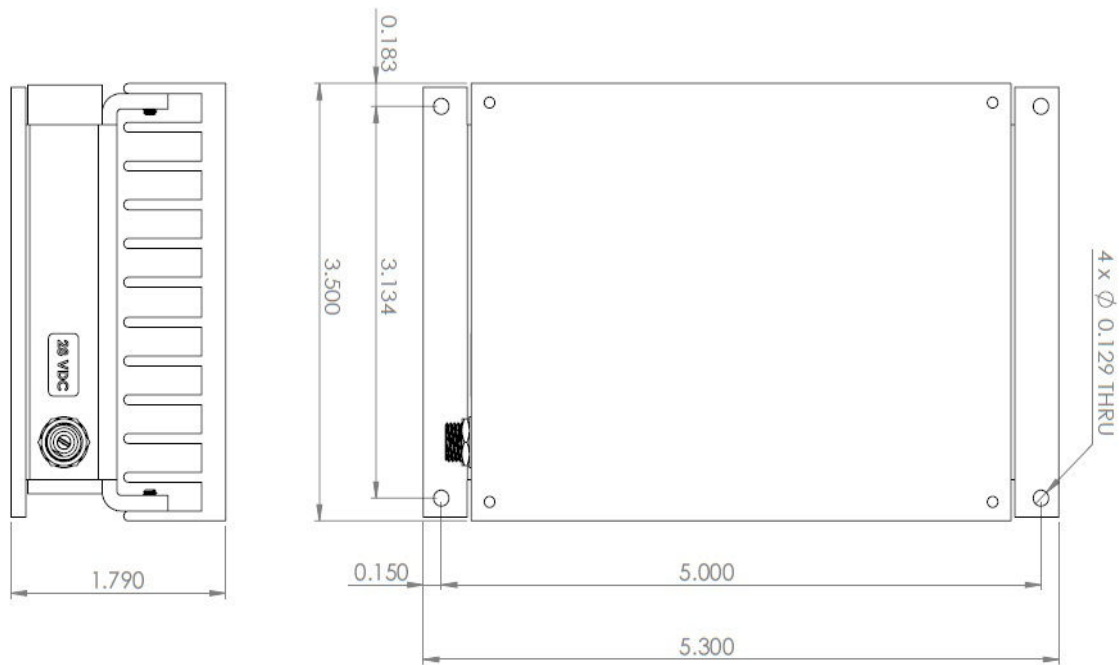
## Mechanical Outline



# NuPower™ NW-PA-S-75-C01-S01

## Optional Heatsink

Heatsink with Integrated Fan: HTSK-02



### Accessory Part Numbers - Sold Separately

Part Number	Description
<a href="#">NW-FL-05LPLE-2500-SFSF-M01</a>	Harmonic Filter Module
TBD	Standard Interface Cable Assembly - Flying Leads
TBD	Upgraded Interface Cable Assembly - Banana Plug Termination (Optional)
HTSK-02	Heatsink with Fan Assembly (Optional)

### Pinout

Function	I/O	Pin	Logic Voltage
DC Power (Primary Power, +11 to +32 Volts)	I	TBD	-
Ground (DC Return)	I	TBD	-
Over Temperature Flag	I	TBD	-
T/R Enable			TBD
T/R Mode: Source (Autosense) <sup>1</sup> T/R Mode: Sink (Manual T/R) [High TX / Low RX]	I/O	TBD	TBD

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>

<sup>1</sup>Autosense automatically switches to transmit and receive based on input signal strength. Typical threshold is TBD; see user manual for complete information.

## 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

