

NuWaves

RF Solutions

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 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 suitable 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 +26 dBm RF input, the amplifier typically provides 22.5 dB of gain to achieve 75 Watts RF output power. The NuPower S-75-C01-S01's 35% typical power efficiency and 14 in³ form factor make it ideal for size, weight, and power-constrained broadband RF telemetry and tactical communication systems. The NuPower S-75-C01-S01's rugged chassis and simple connections allow the system integrator to easily incorporate the unit into a platform operating in harsh environments with limited space.

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
- 22.5 dB (typ) of Power Gain
- Small Form Factor
- Highly Linear LDMOS Technology
- Over Voltage Fault
- Over Current Fault
- Temperature Fault

Applications

- Unmanned Aircraft Systems (UAS) - Group 2 - Group 5
- Unmanned Ground Vehicles (UGV)
- Software Defined Radios
- Common Launch Tube (CLT)
- Air Launch Effect (ALE)
- Counter UAS 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	30	V
Max Device Current	10	A
¹ Max RF Input Power CW, $Z_L=50\Omega$	+29	dBm
Max Operating Temperature (ambient)	+71 °C	°C
Max Operating Temperature (baseplate)	+85 °C	°C
Max Storage Temperature	+85 °C	°C

Export Classification
EAR 99

¹ RF Output Power must be limited to 100W max regardless of input power

Electrical Specifications @ 28 VDC, 25 °C, $Z_S=Z_L=50\Omega$, CW, 2.2-2.5 GHz, $P_{in} = +26$ dBm (unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit	Condition
Operating Frequency	BW	2200		2500	MHz	
RF Output Power, P_{sat}	P_{sat}	45	75	100	W	
Power Gain	G		22.5		dB	
Power Gain Flatness	ΔG		± 0.85		dB	
Output Power @ 1 dB Compression	P_{1dB}		46		dBm	
Small Signal Gain	G		TBR		dB	2350 MHz, @ -10 dBm Input
Small Signal Gain Flatness	ΔG		TBR		dB	$P_{in} = -10$ dBm
Harmonics	2nd		-48 (TBR)		dBc	
	3rd		-54 (TBR)			
Operating Voltage	VDC	24	28	30	V	
Module Efficiency			35		%	
Switching Speed	$T_{X_{ON/OFF}}$			2.0	μs	10% ctrl to 90% RF
Nominal Input Drive Level	P_{IN}		+26	+29	dBm	
Quiescent Current	I_{DQ}		57		mA	RF Enable Off (No Bias)
Quiescent Bias Current	I_{DQ}		1.3		A	RF Enable On (Biased)
Operating Current	I_{DD}		7.5	9.5	A	
Input VSWR	VSWR		1.48:1			
Output Mismatch VSWR	VSWR			10:1	Ψ	No damage at all phase angles

NuPower™ NW-PA-S-75-C01-S01

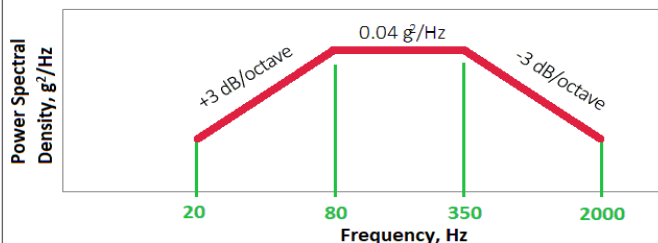
Specifications (cont.)

Mechanical Specifications

Parameter	Value	Unit	Limits
Dimensions	4.0 x 3.5 x 1.0	in	Max
Weight	14	oz	Max
RF Connectors, Input/Output	SMA		
Interface Connector	15-Pin Micro D		
Cooling	Adequate Heatsink Required		

Environmental Specifications

Parameter	Symbol	Min	Typ	Max	Unit
Operating Temperature (ambient)	T _A	-40		+71	°C
Operating Temperature (baseplate)	T _C	-40		+85	°C
Storage Temperature	T _{STG}	-55		+85	°C
Altitude	ALT			50,000	ft
Vibration / Shock Profile (Random profile in x,y, z axis, as per Figure for 15 minute duration in each axis)					



EVM vs Output Power vs Modulation

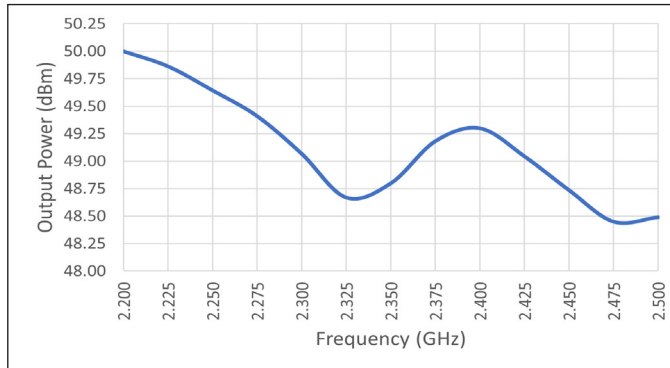
Modulation (802.11g, 20MHz BW, OFDM)	Date Rate	Output Power (W)	EVM (dB)	EVM (%)
64QAM	54 MBPS	10	≤ -27	≤ 4.46
16QAM	36 MBPS	20	≤ -21	≤ 8.91
QPSK	12 MBPS	35	≤ -15	≤ 17.78
BPSK	9 MBPS	50	≤ -7	≤ 44.66

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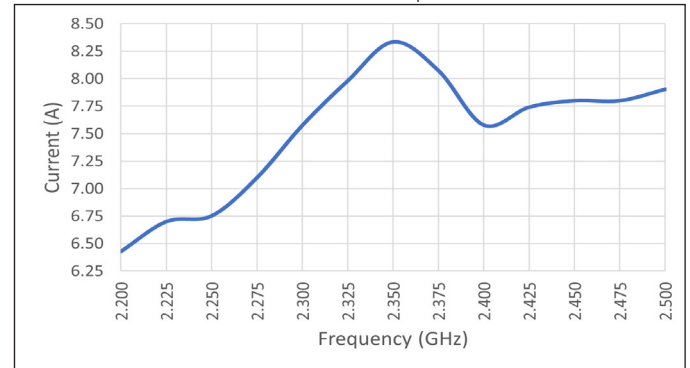
Performance

Test Conditions: +28 VDC, +25 °C, $Z_S=Z_L=50 \Omega$, CW, +26 dBm Input Power (unless otherwise specified)

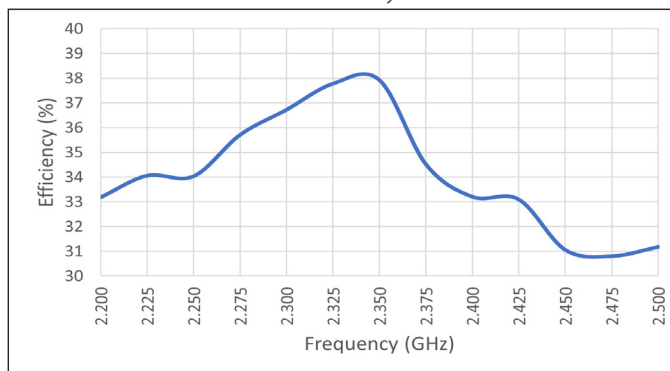
Output Power



Current Consumption

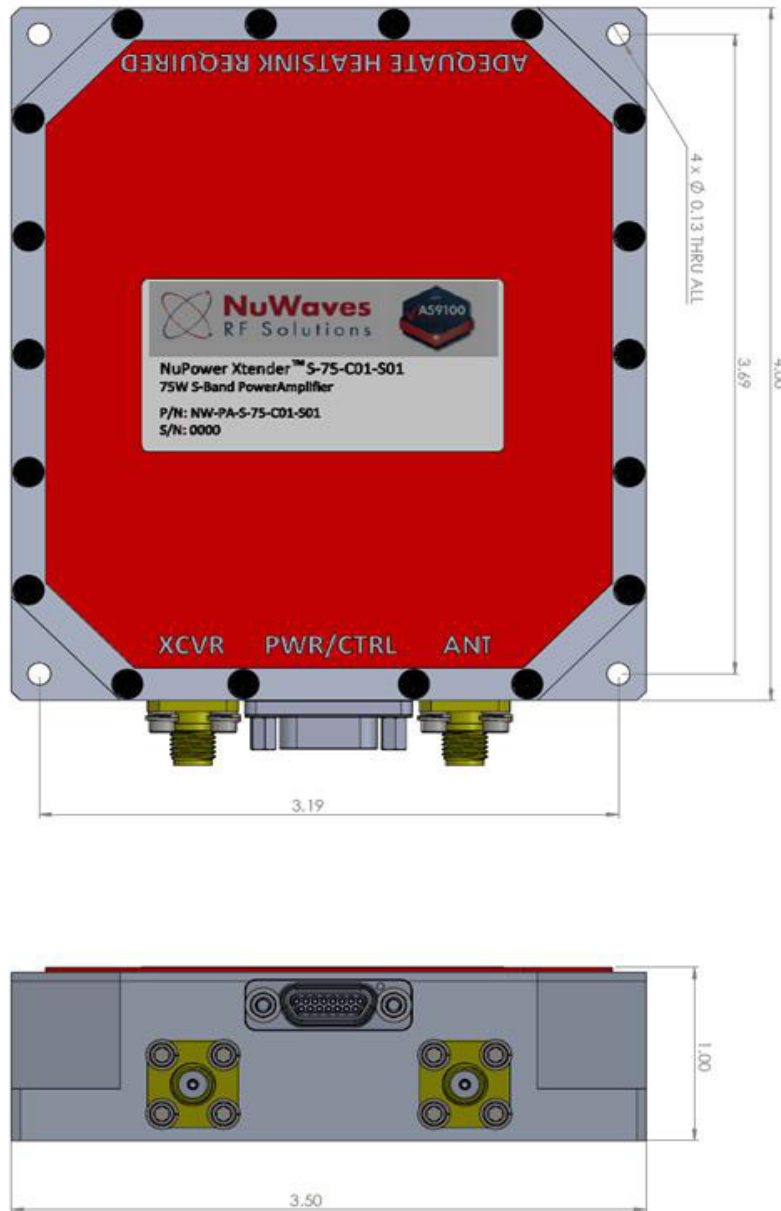


Efficiency



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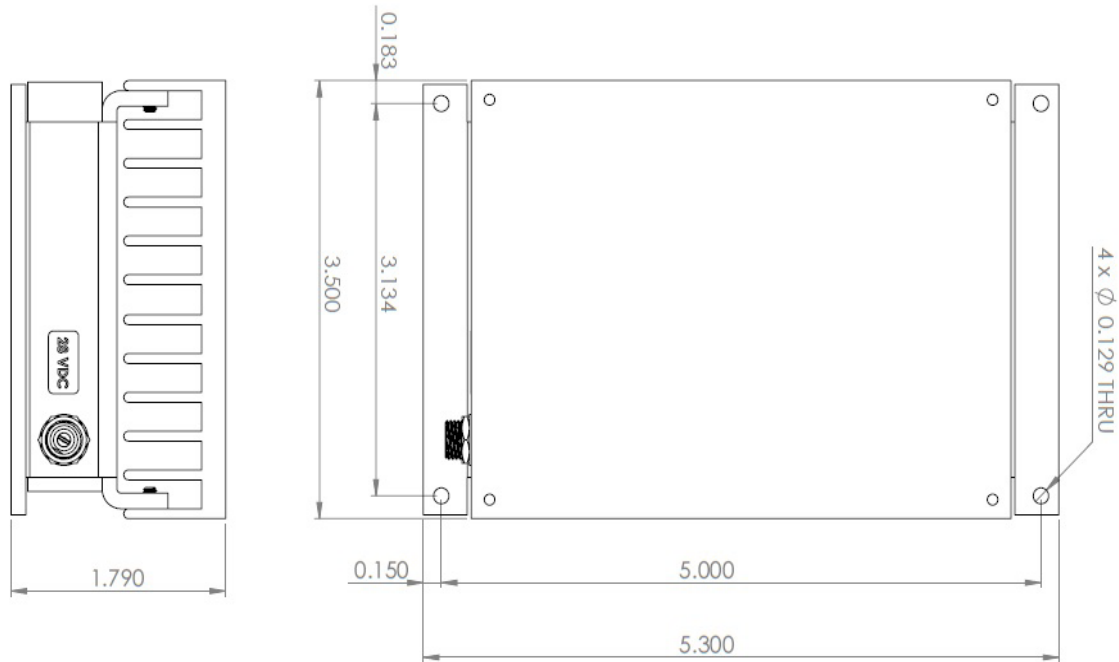
Mechanical Outline



NuPower™ NW-PA-S-75-C01-S01

Optional Heatsink

Heatsink with Integrated Fan: HTSK-02



Accessory Part Numbers - Sold Separately

Part Number	Description
PA-CBL-11-F	Standard Interface Cable Assembly - Flying Leads
PA-CBL-11-B	Upgraded Interface Cable Assembly - Banana Plug Termination (Optional)
HTSK-02	Heatsink with Fan Assembly (Optional)

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>

Pinout

Function	I/O	Pin
DC Power (Primary Power, +24 to +30 V)	I	1-3, 9-11
Ground (DC Return)	I	4-6, 12-14
Fault ¹ (0V = No Fault / 3.3V = Fault)	O	7
Auto/Man ^{1,4}	I/O	8
TX Enable ¹ Default TX Mode: Manual ² Optional TX Mode: Autosense ³ [+3.3V ¹ = TX Enable / 0V = Standby]	I/O	15

¹Default Logic = 3.3V. Contact sales@nuwaves.com for 5V or active high options.

²Default TX Mode: Manual. Contact sales@nuwaves.com for Autosense options.

³Autosense automatically switches to transmit and standby based on input signal strength. See user manual for complete information.

⁴This line defaults to Manual TX Enable only. In this mode, this line can be tied back. Contact sales@nuwaves.com for user control over manual and autosense modes, or defaulting to autosense. See user manual for complete information.

Contact NuWaves



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