



Trusted RF Solutions™

NuPower™ S5Q01 S-Band Power Amplifier

5 Watt CW
2200 MHz - 2500 MHz

P/N: NW-PA-S-5-Q01



The NuWaves' NuPower™ S5Q01 is a smart, miniature solid state power amplifier that delivers over 5 watts of RF power across the frequency range of 2200 to 2500 MHz, and features automatic gain with RF output power level adjustment.

The NuPower S5Q01 offers digital control through a simple RS-232 interface. Utilizing the onboard automatic gain control, the NuPower S5Q01 offers 17 discrete, user-programmable, output settings in 1 dB steps from the maximum RF output power level.

Based on the latest gallium nitride (GaN) technology, the NuPower S5Q01's 20 - 40% power efficiency and small 8.5 in³ form factor make it ideal for size, weight, and power-constrained RF telemetry and tactical communication systems. The NuPower S5Q01's rugged chassis allows 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 Engineering.

Features

- 5 Watts RF Output Power
- 2200 to 2500 MHz
- Small Form Factor (2.125" x 5" x 0.8")
- High-Efficiency GaN Technology
- DC input via Bias-T
- Single Power Supply
- Over-Voltage Protection
- Reverse-Voltage Protection

Benefits

- Extended Range
- Improved Link Margin
- Lessened load on DC power budget due to high efficiency operation
- Consumes 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
- Test Labs

NuPower™ S5Q01 Power Amplifier

Specifications

Absolute Maximums

Parameter	Rating	Unit
Max Device Voltage	32	V
Max Device Current	2.0	A
Max RF Input Power, $Z_L = 50 \Omega$	12	dBm
Max Operating Temperature (ambient)	60	°C
Max Operating Temperature (baseplate)	85	°C
Max Storage Temperature	85	°C

Export Classification
EAR99

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

Parameter	Symbol	Min	Typ	Max	Unit	Condition
Operating Frequency	BW	2200		2500	MHz	
RF Output Power	P_{SAT}	5			W	Pin = +10 dBm
Small Signal Gain	G		27		dB	
Small Signal Gain Flatness	ΔG				dB	Pin = -30 dBm
Power Gain Flatness					dB	Pin = +10 dBm
Input VSWR	VSWR			1.7:1		
Nominal Input Drive Level	P_{IN}		+10		dBm	
Operating Voltage	VDC	22	28	32	V	
Quiescent (no RF) Current	I_{DQ}		0.40		A	@ 28 Volts
Operating Current	I_{DQ}		1.0		A	Pin = +10 dBm
Module Efficiency			25		%	
Third Order Order Intercept Point (Two tone test at 1 MHz spacing, Pout = 20 dBm / tone)	OIP3				dBm	
Harmonics	2nd				dBc	
	3rd					
Output Mismatch (No Damage)				10:1		All phase angles

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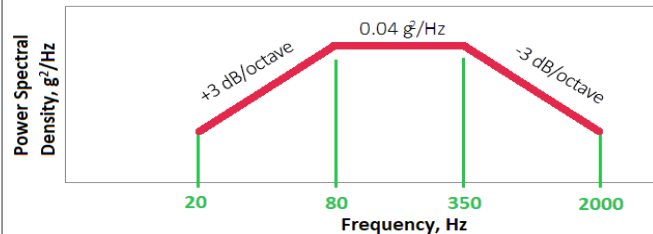
Specifications (cont.)

Mechanical Specifications

Parameter	Value	Unit	Limits
Dimensions	2.125 x 5.000 x 0.800	in	Max
Weight	10	oz	Max
RF Connectors, Input/Output	SMA Female		
Interface Connector	Bias-T Compatible		
Cooling	Adequate Heatsink Required		

Environmental Specifications

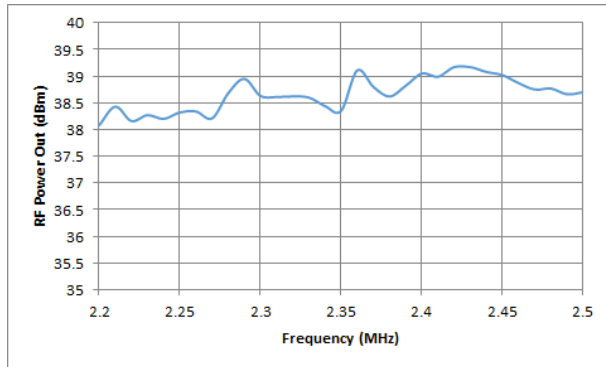
Parameter	Symbol	Min	Typ	Max	Unit
Operating Temperature (ambient)	T_A	-40		+60	°C
Operating Temperature (baseplate)	T_C	-40		+85	°C
Storage Temperature	T_{STG}	-55		+85	°C
Relative Humidity (non-condensing)	RH			95	%
Altitude MIL-STD-810F - Method 500.4	ALT			30,000	ft
Vibration / Shock Profile (Random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



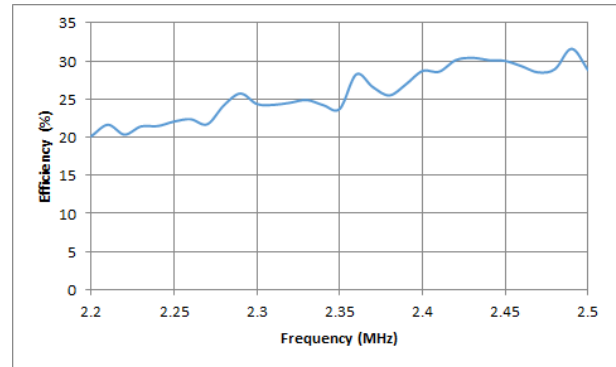
NuPower™ S5Q01 Power Amplifier

Performance Plots (cont.)

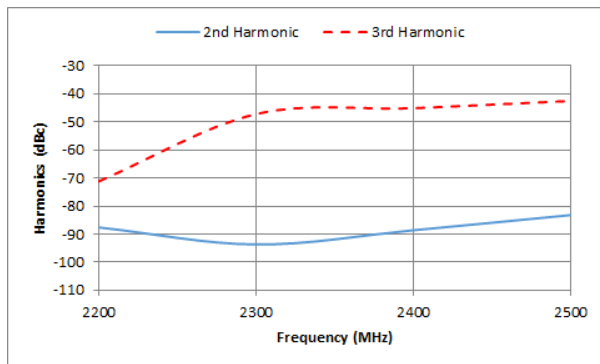
RF Output Power



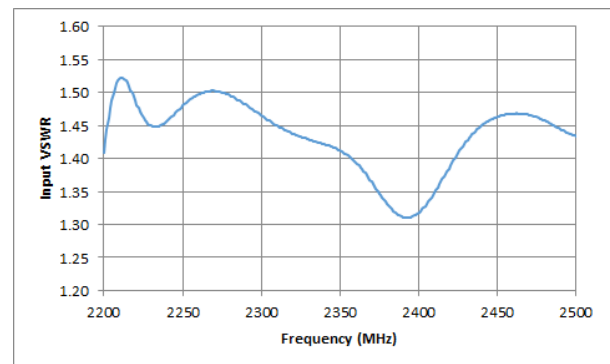
Efficiency vs Power Output



Harmonics (@ Psat)

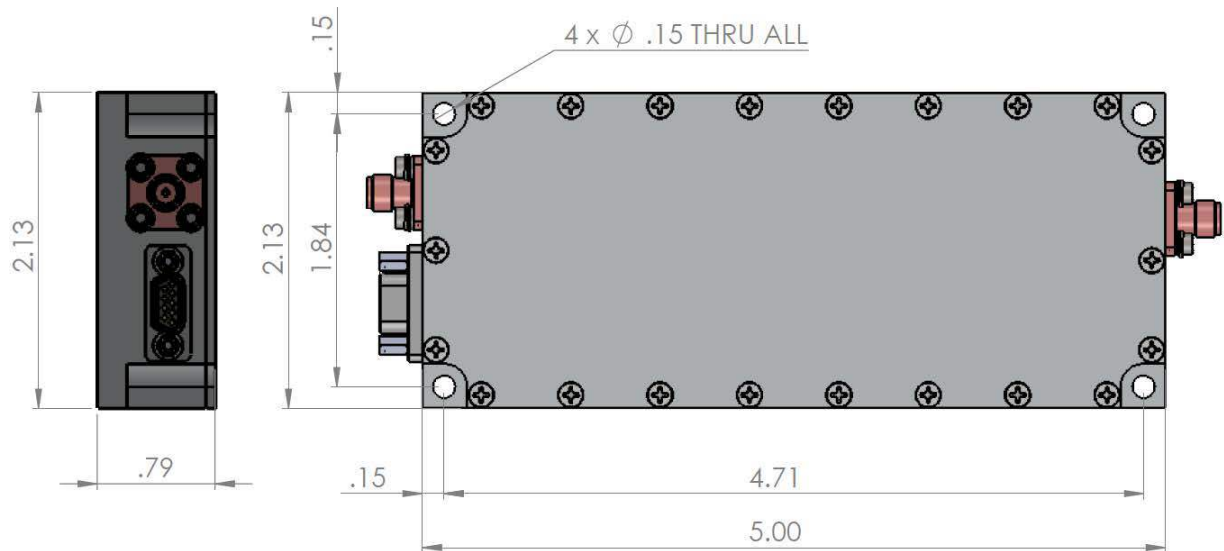


Input VSWR



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Mechanical Outline



Accessory Part Numbers

Part Number	Description
NW-FL-05LPLE-2500-SFSF-M01	Harmonic Filter Module
NW-PA-ACC-CB09MJ	Standard Interface Cable Assembly - Flying Leads (included with module)
NW-PA-ACC-CT09MJ	Upgraded Interface Cable Assembly - Banana Plug Termination
NW-PA-ACC-KT06	Accessory Kit, which includes Fan-Cooled Heatsink and Upgraded Interface Cable
NW-PA-ACC-HS08	Heatsink with Integrated Fan

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 Engineering
132 Edison Drive
Middletown, OH 45044

www.nuwaves.com
product.sales@nuwaves.com
513.360.0800

 **NuWaves**
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