



*Trusted RF Solutions™*

## *Preliminary* NuPower™ C10Q02 C-Band Power Amplifier

10 Watt CW

5250 MHz - 5850 MHz

P/N: NW-PA-C-10-Q02

(includes NW-PA-ACC-CB09MH interface cable)



**The NuWaves' NuPower™ C10Q01 is a highly efficient, miniature solid state power amplifier that delivers over 10 watts of RF power across the frequency range of 5250 to 5850 MHz.**

Based on the latest gallium nitride (GaN) technology, the NuPower C10Q01's 10 - 30% power efficiency and compact 24 in<sup>3</sup> form factor make it ideal for size, weight, and power-constrained RF telemetry and tactical communication systems. The NuPower C10Q01'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

- 10 Watts RF Output Power
- 5250 to 5850 MHz
- Small Form Factor (2.96" x 8.09" x 1.0")
- High-Efficiency GaN Technology
- Transmit/Standby Mode
- Single Power Supply
- Over-Voltage Protection
- Reverse-Voltage Protection
- Logic On/Off Control

### 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™ C10Q02 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	5250		5850	MHz	
RF Output Power	$P_{SAT}$	10			W	Pin = 0 dBm
Small Signal Gain	G		30		dB	
Small Signal Gain Flatness	$\Delta G$				dB	Pin = -30 dBm
Power Gain Flatness					dB	Pin = +10 dBm
Input VSWR	VSWR			2:1		
Nominal Input Drive Level	$P_{IN}$		+10		dBm	
Operating Voltage	VDC	22	28	32	V	
Quiescent (no RF) Current	$I_{DQ}$			200	mA	@ 28 Volts
Operating Current	$I_{DD}$		4.0		A	Pin = +10 dBm
Module Efficiency			28		%	
Switching Speed	$TX_{ON/OFF}$				$\mu S$	10% to 90%
Third Order Intercept Point (Two tone test at 1 MHz spacing, $P_{out} = 20 \text{ dBm} / \text{tone}$ )	OIP3				dBm	
Harmonics	2nd				dBc	
	3rd					
Output Mismatch (No Damage)				10:1		All phase angles

# NuPower™ C10Q02 Power Amplifier

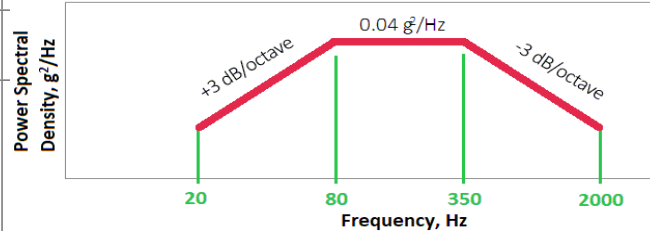
## Specifications (cont.)

### Mechanical Specifications

Parameter	Value	Unit	Limits
Dimensions	2.96 x 8.09 x 1.00	in	Max
Weight	32	oz	Max
RF Connectors, Input/Output	SMA Female		
Interface Connector	Micro-D, 9-pin Socket		
Cooling	Adequate Heatsink Required		

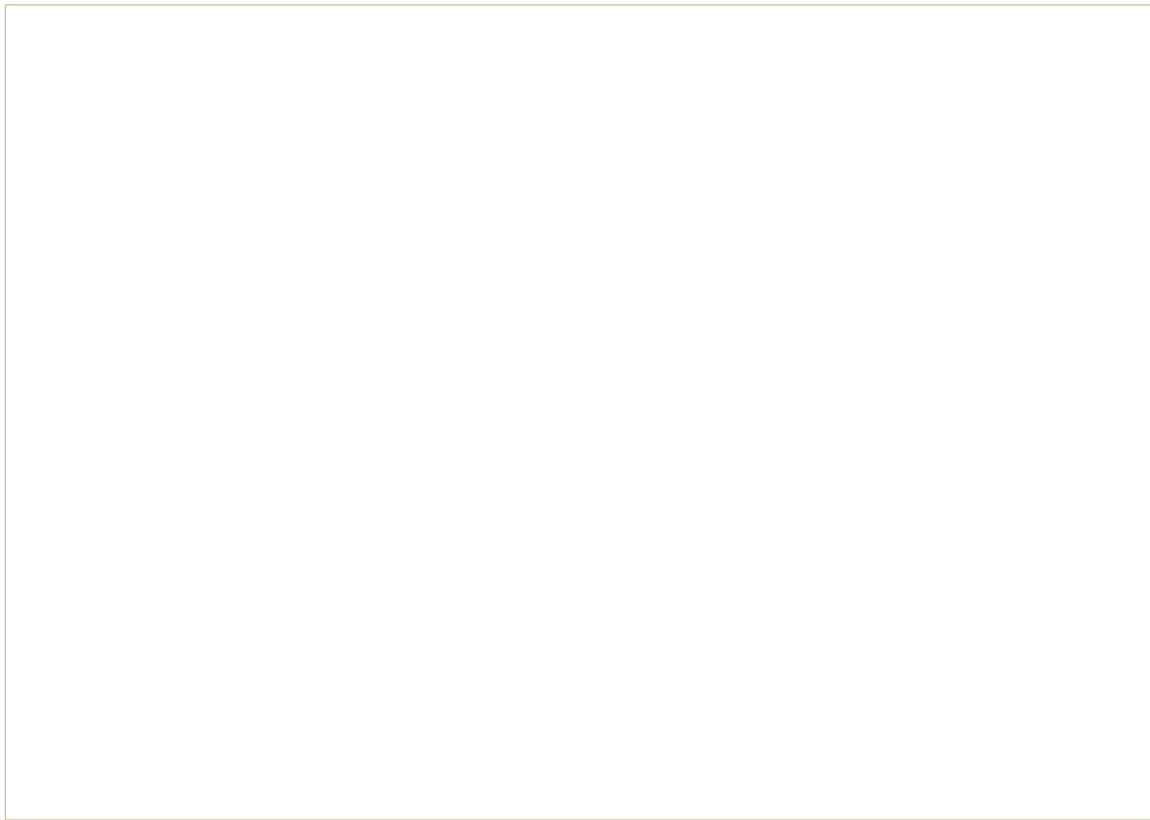
### Environmental Specifications

Parameter	Symbol	Min	Typ	Max	Unit
Operating Temperature (ambient)	T <sub>A</sub>	-40		+60	°C
Operating Temperature (baseplate)	T <sub>C</sub>	-40		+85	°C
Storage Temperature	T <sub>STG</sub>	-55		+85	°C
Relative Humidity (non-condensing)	RH			95	%
Altitude MIL-STD-810F - Method 500.4					
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-xxxxx	Standard Interface Cable Assembly - Flying Leads (included with module)
NW-PA-ACC-xxxxx	Upgraded Interface Cable Assembly - Banana Plug Termination
NW-PA-ACC-xxxx	Accessory Kit, which includes Fan-Cooled Heatsink and Upgraded Interface Cable
NW-PA-ACC-xxxx	Heatsink with Integrated Fan

### Pinout

Function	I/O	Pin
Ground	I	
DC Power (+11 to +32 VDC)	I	
RF Enable 0V or GND = RF ON +5V or NC = RF OFF	I	
No Connect	-	
Over Temperature Flag 0V = temperature fault +5V = no fault	O	

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>

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