

NuWaves

RF Solutions

NuPower™ CX-20-C01-S01 Solid State Power Amplifier

20 Watts CW (typ)
6 GHz to 12 GHz

P/N: NW-PA-CX-20-C01-S01



Contact sales@nuwaves.com for custom options.

The NuPower™ CX-20-C01-S01 is a small connectorized solid state power amplifier that typically delivers 20 Watts of RF power to extend the operational range of data links and transmitters.

The NuPower CX-20-C01-S01 accepts a nominal +5 dBm RF input and provides 38 dB (typ) of power gain from 6 GHz to 12 GHz for continuous wave (CW) and near-constant envelope waveforms. Based on the latest gallium nitride (GaN) technology, the power and form factor of the NuPower CX-20-C01-S01 make it ideal for size, weight, and power-constrained RF telemetry, tactical communication systems, and electronic warfare systems.

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

Features

- 20 Watts RF Output Power
- Small Form Factor
- Temp Fault Indicator
- Thermal Protection
- Optional Fan Cooling Heatsink

Benefits

- Extended Range
- Improved Link Margin
- Requires less volume on space-constrained platforms

Applications

- Unmanned Aircraft Systems (UAS)
Group 2 through Group 5
- Counter UAS Detection & Mitigation
- Datalinks
- Radar
- Radio Range Extension
- Space Systems (must be qualified for specific mission)

NuPower™ CX-20-C01-S01 Power Amplifier

Specifications

Absolute Maximums

Parameter	Rating	Unit
Max Device Voltage	28.5 (TBR)	V
Max Device Current	TBD	A
Max RF Input Power, $Z_L = 50 \Omega$, CW	33	dBm
Max Operating Temperature (ambient)	TBD	°C
Max Operating Temperature (baseplate)	TBD	°C

Export Classification
EAR99

Electrical Specifications @ 28 VDC, 25 °C, $Z_S = Z_L = 50 \Omega$, CW, 6-12 GHz, +5 dBm Input Power, Unless otherwise specified

Parameter	Symbol	Min	Typ	Max	Unit	Condition
Operating Frequency	BW	6		12	GHz	
RF Output Power	P_{SAT}	43	44 (TBR)		dBm	
Output Power @ 1dB & 3dB Compression Points	P_{1dB}/P_{3dB}		TBD		dBm	6 GHz
			TBD			9 GHz
			TBD			12 GHz
Small Signal Gain	G		50 (TBR)		dB	6 GHz
			50 (TBR)			9 GHz
			50 (TBR)			12 GHz
Power Gain Flatness	ΔG		± 1 (TBR)		dB	
Small Signal Gain Flatness	ΔG		± 3 (TBR)		dB	$P_{in} = -40$ dBm
Input VSWR	VSWR		1.5:1 (TBR)			
Nominal Input Drive Level	P_{IN}		+5		dBm	
Operating Voltage	VDC	27.5 (TBR)	28	28.5 (TBR)	V	
Quiescent Current (RF Enable Off)	I_{DQ}		TBD		mA	
Quiescent Current (RF Enable On)	I_{DQ}		TBD		A	
Operating Current	I_{DD}		TBD		A	
Module Efficiency			30 (TBR)		%	
Switching Speed	$TX_{ON/OFF}$		TBD	2 (TBR)	μs	
Output Mismatch (No Damage)				2:1 (TBR)	ψ	Band specific circulator recommended
2nd/3rd Harmonics @ P_{sat}			TBD		dBc	6 GHz
			TBD		dBc	9 GHz
			TBD		dBc	12 GHz

*Contact NuWaves for custom solutions at Operating Voltages other than +28VDC.

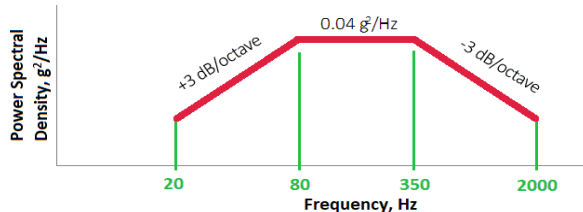
NuPower™ CX-20-C01-S01 Power Amplifier

Specifications (cont.)

Mechanical Specifications

Parameter	Value	Unit	Limits
Dimensions	4.00 x 2.75 x 0.80 (TBR)	in	Max
Weight	TBD	oz	Max
RF Connectors, Input/Output	SMA Female		
Interface Connector	Micro-D-Sub, 21 Pin Socket (TBR)		
Cooling	Adequate Heatsink Required		

Environmental Specifications

Parameter	Symbol	Min	Typ	Max	Unit										
Operating Temperature (ambient)	T _A	-40		TBD	°C										
Operating Temperature (baseplate)	T _C	-40		TBD	°C										
Storage Temperature	T _{STG}	-55		+85	°C										
Relative Humidity (non-condensing)	RH			95	%										
Vibration / Shock Profile (Random profile in x,y, z axis, as per Figure for 15 minute duration in each axis)	 The graph illustrates the vibration profile for the power amplifier. The y-axis represents Power Spectral Density in g^2/Hz, and the x-axis represents Frequency in Hz. The profile is defined by the following points and slopes: <table><tr><th>Frequency (Hz)</th><th>Power Spectral Density (g^2/Hz)</th></tr><tr><td>20</td><td>Start of +3 dB/octave slope</td></tr><tr><td>80</td><td>0.04</td></tr><tr><td>350</td><td>0.04</td></tr><tr><td>2000</td><td>End of -3 dB/octave slope</td></tr></table>					Frequency (Hz)	Power Spectral Density (g^2/Hz)	20	Start of +3 dB/octave slope	80	0.04	350	0.04	2000	End of -3 dB/octave slope
Frequency (Hz)	Power Spectral Density (g^2/Hz)														
20	Start of +3 dB/octave slope														
80	0.04														
350	0.04														
2000	End of -3 dB/octave slope														

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Performance Plots

Test Conditions: +28 VDC, +25 °C, $Z_S=Z_L=50\ \Omega$, CW, +5dBm Input Power, Unless otherwise stated

Output Power

(coming soon)

Output Power - Stepped Inputs

(coming soon)

Output Power vs Temperature

(coming soon)

Output Power vs Input Power

(coming soon)

Gain vs Input Power

(coming soon)

P1dB & P3dB

(coming soon)

Efficiency

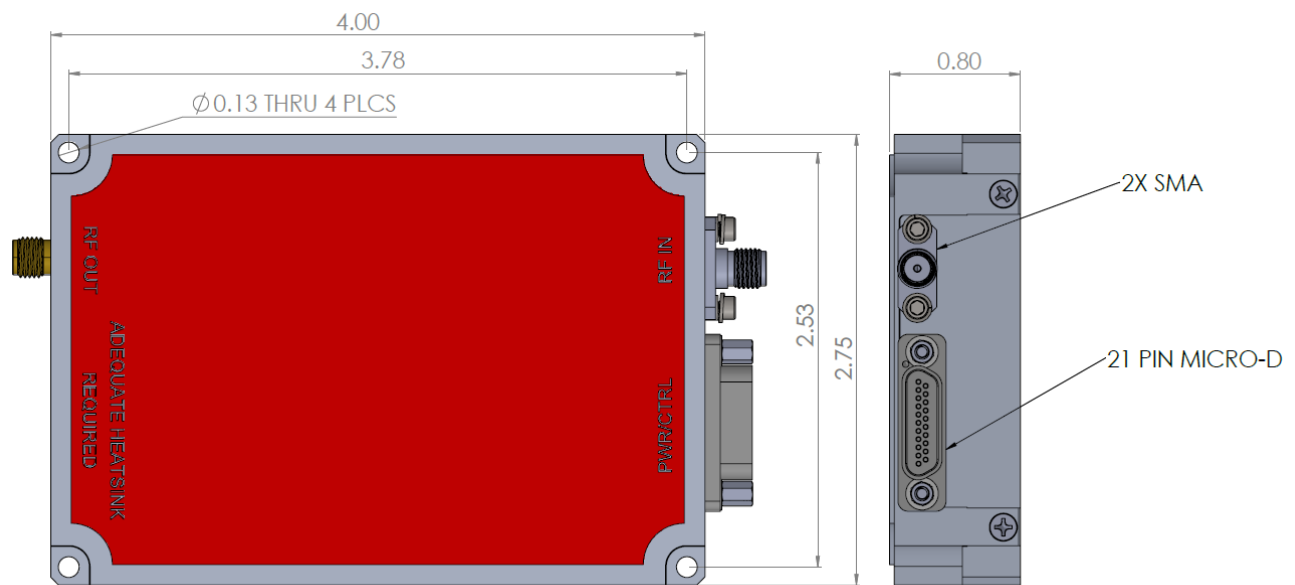
(coming soon)

DC Current Consumption

(coming soon)

NuPower™ CX-20-C01-S01 Power Amplifier

Mechanical Outline



NuPower™ CX-20-C01-S01 Power Amplifier

Accessory Part Numbers - Sold Separately

Pinout

Part Number	Description
TBD	Standard Interface Cable Assembly - Flying Leads
TBD	Upgraded Interface Cable Assembly - Banana Plug Termination
TBD	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>

Function	I/O	Pin	Description
DC Power (+28 Volts)	I	TBD	
Ground	I	TBD	
Over Temperature Flag 0V = temperature fault +5V = no fault	O	TBD	+5 V CMOS Logic Level
RF Enable 0 V or GND = RF ON NC = RF OFF	I	TBD	5V CMOS Logic Levels: Logic HIGH [+2.1V to +5.0V] Logic LOW [0V to +0.8]

Contact NuWaves



NuWaves RF Solutions
132 Edison Drive
Middletown, OH 45044

www.nuwaves.com
sales@nuwaves.com
513.360.0200

