NuWaves
RF Solutions

Preliminary

NuPower™ KU-80-C01-S01

Solid State Power Amplifier

80 Watts CW (typ)
13.0 GHz to 15.5 GHz

P/N: NW-PA-KU-80-C01-S01

Custom options available; contact sales@nuwaves.com for more information

The NuPower™ KU-80-C01-S01 is a small connectorized solid state power amplifier that delivers 80 watts of RF power to extend the operational range of data links and transmitters.

The NuPower KU-80-C01-S01 accepts a nominal +25 dBm RF input and provides 23 dB (min) of power gain from 13.0 GHz to 15.5 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 KU-80-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

- 80 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
- SATCOM
- Datalinks
- Radar
- Radio Range Extension

Prelim-NuPower™ KU-80-C01-S01 Power Amplifier

Specifications

Absolute Maximums

Parameter	Rating	Unit
Max Device Voltage	29.5	V
Max Device Current	13	A
Max RF Input Power, $Z_L = 50\ \Omega$, CW	28	dBm
Max RF Input Power, $Z_s \leq 3{:}1$ VSWR	27	dBm
Max Operating Temperature (ambient)	60	℃
Max Operating Temperature (baseplate)	85	℃
Max Storage Temperature	150	℃

Export Classification
EAR99

Electrical Specifications

@ 28 VDC, 25 ℃, Z_S=Z_L=50 Ω, CW, +25 dBm Input Power, Unless otherwise specified

Parameter	Symbol	Min	Typ	Max	Unit	Condition
Operating Frequency	BW	13		15.5	GHz	
RF Output Power	P_{SAT}		49		dBm	
Output Power @ 1dB & 3dB Compression Points	P1dB/P3dB		TBD		dBm	14.5 GHz
			TBD			15.0 GHz
			TBD			15.5 GHz
Small Signal Gain	G				dB	
			30			
Power Gain Flatness	ΔG		±0.3		dB	13.0 - 15.5 GHz
Small Signal Gain Flatness	ΔG		±1.5		dB	13.0 - 15.5 GHz
Input VSWR	VSWR		1.45:1			
Nominal Input Drive Level	P_{IN}		+25		dBm	
Operating Voltage	VDC		28*	29.5	V	
Quiescent Current (RF Enable Off)	I_{DQ}		200		mA	
Quiescent Current (RF Enable On)	I_{DQ}		1		A	
Operating Current	I_{DD}		11		A	
Module Efficiency			25		%	
Switching Speed	$TX_{ON/OFF}$			2	µS	
Output Mismatch (No Damage)			TBD		Ψ	
2nd Harmonics			-33		dBc	13.0 GHz
			-33		dBc	14.5 GHz
			-50		dBc	15.0 GHz

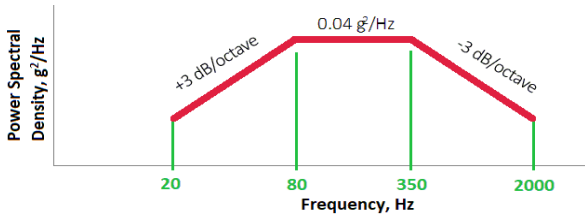
*Contact NuWaves for custom solutions at Operating Voltages other than +28VDC

Specifications (cont.)

Mechanical Specifications

Parameter	Value	Unit	Limits
Dimensions	2.75 x 2.00 x 0.6	in	Max
Weight	2.75 (TBR)	oz	Max
RF Connectors, Input/Output	SMA Female		
Interface Connector	Micro-D-Sub, 21 Pin Socket		
Cooling	Adequate Heatsink Required		

Environmental Specifications

Parameter	Symbol	Min	Typ	Max	Unit
Operating Temperature (ambient)	T_A	-40		+60	℃
Operating Temperature (baseplate)	T_C	-40		+85	℃
Storage Temperature	T_{STG}	-55		+150	℃
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)					

Performance Plots

Test Conditions: +28 VDC, +25 °C, Z_S=Z_L=50 Ω

Output Power

Output Power - Stepped Inputs

Output Power vs Temperature

Output Power vs Input Power

Gain vs Input Power

P1dB & P3dB

Efficiency

DC Current Consumption

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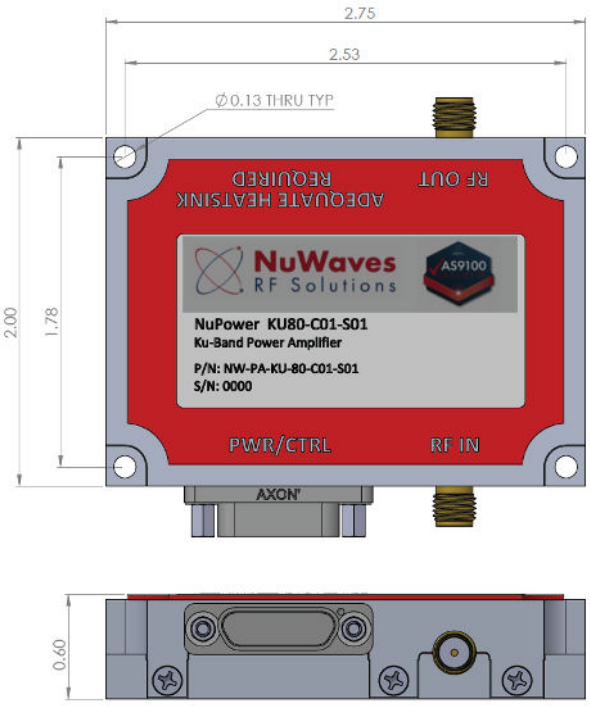
Mechanical Outline



Accessory Part Numbers (sold separarately)

Part Number	Description
PA-CBL-Ø8-F	Standard Interface Cable Assembly - Flying Leads
PA-CBL-Ø8-B	Upgraded Interface Cable Assembly - Banana Plug Termination
HTSK-09	Heatsink with Integrated Fan*

*App note for cooling guidelines, please refer to this document: 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

Pinout

Function	I/O	Pin	Description
DC Power (+28 Volts)	I	1-8	
Ground	I	12-19	
Over Temperature Flag 0V = temperature fault +5 V = no fault	O	21	+5 V CMOS Logic Level
RF Enable 0 V or GND = RF ON NC = RF OFF	I	9	5V CMOS Logic Levels: Logic HIGH [+2.1V to +5.0V] Logic LOW [0V to +0.8]
Signal Ground	I	20	
N/C		10-11	Factory Use Only

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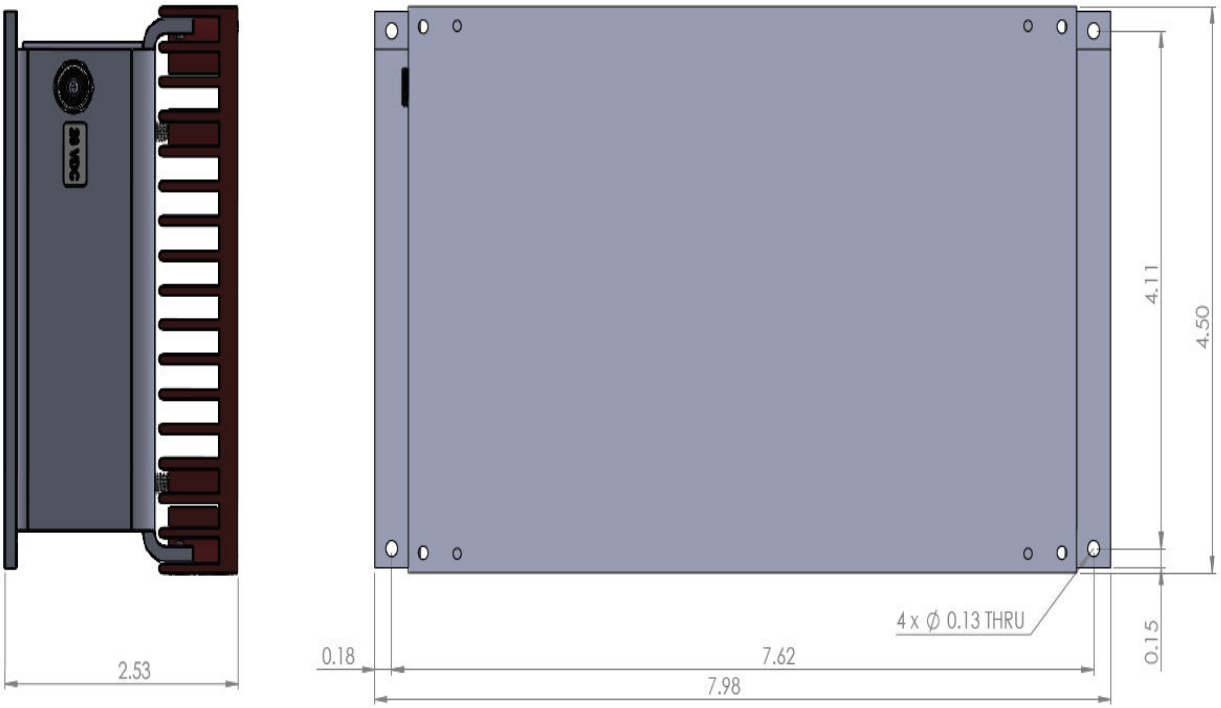
Optional Heatsink Drawing

Heatsink and Integrated Fan: HTSK-07



Contact NuWaves

NuWaves RF Solutions
132 Edison Drive
Middletown, OH 45044

www.nuwaves.com
sales@nuwaves.com
513.360.0800