

NuWaves

RF Solutions

NuPower™ LS75T01 L- & S-Band Solid State Power Amplifier

75 Watts CW
800 MHz to 2.5 GHz

P/N: NW-PA-LS-75-T01



The NuPower™ LS75T01 is a small, highly efficient, solid state power amplifier that provides 100 watts of RF power to boost performance of data links and transmitters.

The NuPower LS75T01 Power Amplifier accepts a nominal +3 dBm (2 mW) RF input and provides ~50 dB of gain from 800 MHz to 2500 MHz. This module handles both constant envelope and complex waveforms such as OFDM, QAM, DVB-T, etc.

Based on the latest gallium nitride (GaN) technology, the NuPower LS75T01's 40% power efficiency at rated power and 31 in^3 form factor make it ideal for size, weight, and power-constrained broadband RF telemetry, tactical communication systems, and electronic warfare systems.

NuPower PAs feature over-voltage protection and can operate over a wide temperature range of $-40\text{ }^{\circ}\text{C}$ to $+85\text{ }^{\circ}\text{C}$ (baseplate).

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

Features

- 75 Watts RF Output Power
- 800 MHz to 2.5 GHz
- Small Form Factor (5" x 10" x 0.61")
- High-Efficiency GaN Technology
- +3 dBm Nominal RF Input
- Over-Voltage Protection
- Logic On/Off Control

Benefits

- Extended Range
- Improved Link Margin
- Reduced load on DC power budget due to high efficiency operation
- Requires less volume on space-constrained platforms

Applications

- Broadband RF Telemetry
- RF Communication Systems
- Electronic Warfare - Airborne Electronic Attack
- Unmanned Aircraft Systems (UAS)
- Unmanned Ground Vehicles (UGV)
- Software Defined Radios

NuPower™ LS75T01 Power Amplifier

Specifications

Absolute Maximums

Parameter	Rating	Unit
Max Device Voltage	32	V
Max Device Current	12	A
Max RF Input Power, $Z_L = 50 \Omega$	15	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	800		2500	GHz	
RF Output Power	P_{SAT}		75		W	800 MHz - 2500 MHz, +3 dBm input
Output Power @ 1dB Compression	P_{1dB}		32		dBm	800 MHz
			43			1500 MHz
			40			2500 MHz
Small Signal Gain	G		60		dB	800 MHz, @ -30 dBm input
			54			1500 MHz, @ -30 dBm input
			47			2500 MHz, @ -30 dBm input
Input VSWR	VSWR		1.2:1			
Nominal Input Drive Level	P_{IN}		+3		dBm	
Operating Voltage	VDC	27	28	30	V	
Quiescent Current	I_{DQ}		0.07		A	RF Enable floating (no RF)
			1.35			RF Enable grounded (no RF)
Operating Current	I_{DD}		7		A	$P_{in} = 0$ dBm
Module Efficiency			40		%	
Switching Speed	$T_{XON/OFF}$		2		μ S	10% to 90%
Third Order Order Intercept Point (Two tone test at 1 MHz spacing, $P_{out} = 20$ dBm / tone)	OIP3		tbd		dBm	800 MHz
			tbd			1500 MHz
			tbd			2500 MHz
Harmonics	2nd		-20		dBc	
	3rd		-30			
Output Mismatch (No Damage)				10:1	Ψ	No damage at all phase angles

NuPower™ LS75T01 Power Amplifier

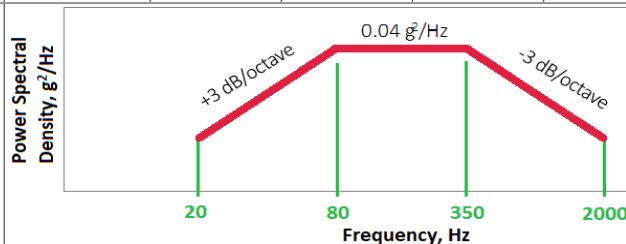
Specifications (cont.)

Mechanical Specifications

Parameter	Value	Unit	Limits
Dimensions	5.0 x 10.0 x 0.61	in	Max
Weight	1.3	lb	Max
RF Connectors, Input/Output	SMA Female		
Interface Connector	Micro-D, 15-pin Socket		
Cooling	Adequate Heatsink Required		

Environmental Specifications

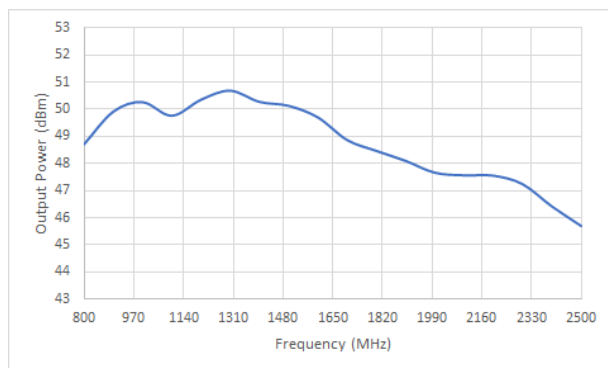
Parameter	Symbol	Min	Typ	Max	Unit
Operating Temperature (ambient)	T_A	-40		+60	°C
Operating Temperature (baseplate)	T_C	-40		+85	°C
Storage Temperature	T_{STG}	-55		+85	°C
Relative Humidity (non-condensing)	RH			95	%
Altitude MIL-STD-810F - Method 500.4	ALT			30,000	ft
Vibration / Shock Profile (Random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



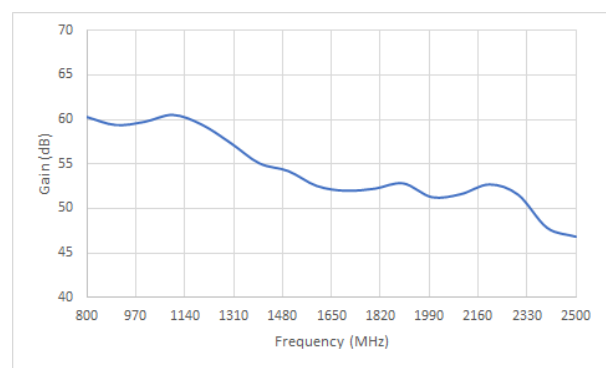
Performance Plots

Test Conditions: +28 VDC, +25 °C, $Z_S=Z_L=50 \Omega$

Output Power [+3 dBm Input Power]



Small Signal Gain [-30 dBm Input Power]

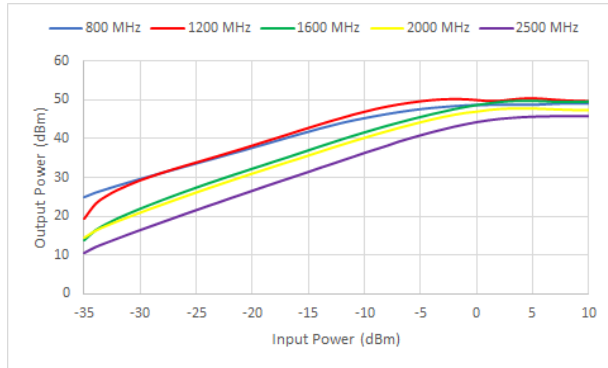


NuPower™ LS75T01 Power Amplifier

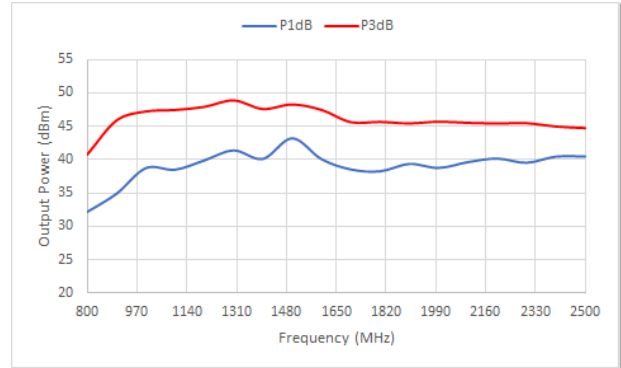
Performance Plots (con't)

Test Conditions: +28 VDC, +25 °C, $Z_S=Z_L=50\ \Omega$

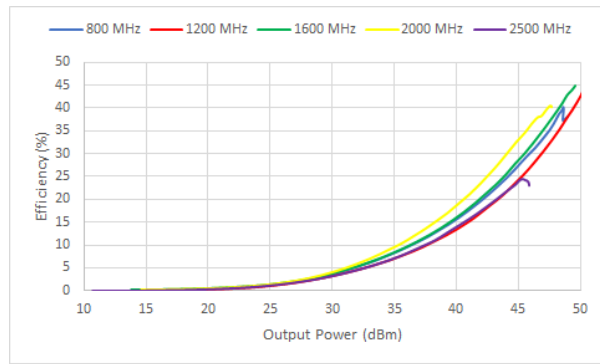
Output Power vs. Input Power



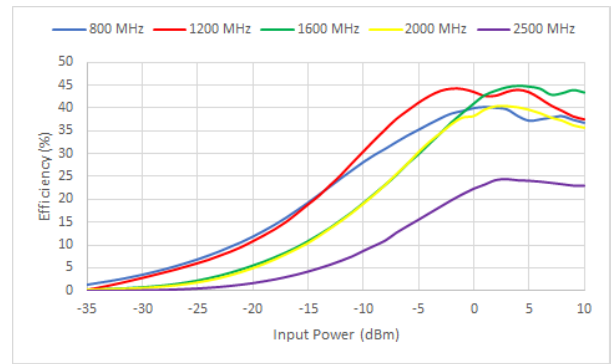
P1dB & P3dB



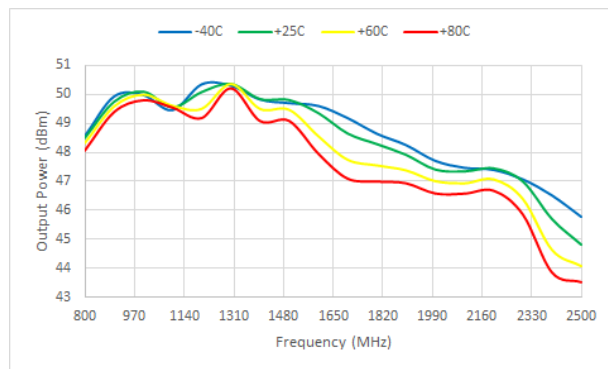
Efficiency vs. Output Power



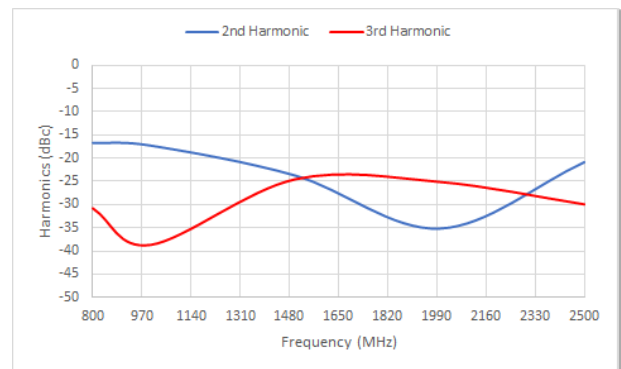
Efficiency vs. Input Power



Output Power vs. Temperature [Baseplate]

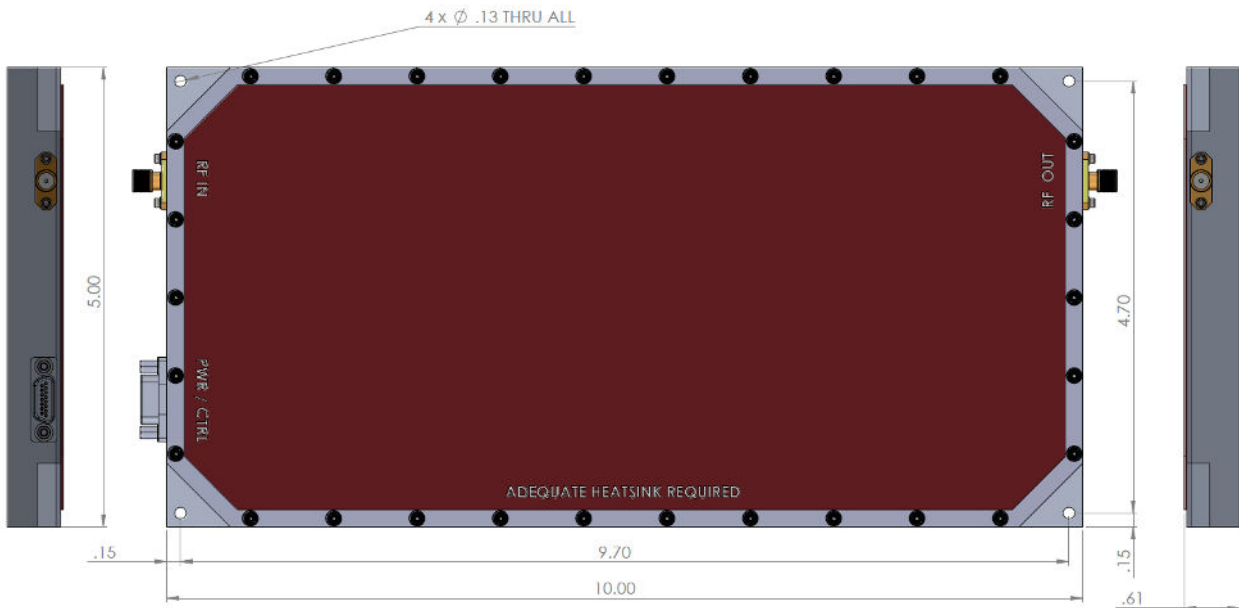


Harmonics [@ Psat]



NuPower™ LS75T01 Power Amplifier

Mechanical Outline



Accessory Part Numbers - Sold Separately

Part Number	Description
NW-PA-ACC-CB15MK	Standard Interface Cable Assembly - Flying Leads
NW-PA-ACC-CT15MK	Upgraded Interface Cable Assembly - Banana Plug Termination
HTSK-04	Heatsink with Integrated Fan

Pinout

Function	I/O	Pin
DC Power (+28 Volts)	I	1-6
Ground	I	9-14
Over Temperature Flag 0V = temperature fault +5V = no fault	O	Pin 7 - Temp Flag 1 Pin 8 - Temp Flag 2
RF Enable 0V or GND = RF ON NC = RF OFF	I	Pin 15

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



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