NuWaves
RF Solutions

NuPower™ LS5MI01-D30

Micro L- & S-Band Solid State Power Amplifier

5 Watt CW
1.0 GHz - 2.5 GHz

P/N: NW-PA-LS-5-MI01-D30

The NuPower™ LS5MI01-D30 Micro L- & S-Band Power Amplifier offers the smallest form factor of the NuPower family of PAs at 1.62 in³. This highly efficient solid state power amplifier provides over 5 watts of RF power across both L and S frequency bands.

Based on the latest gallium nitride (GaN) technology, the NuPower's power efficiency and miniature form factor make it ideal for size, weight, and power-constrained broadband RF telemetry and tactical communication systems. The NuPower LS5MI01 Power Amplifier takes low SWaP to a new level, allowing it to be integrated into some of the smallest aerial platforms flying today.

The NuPower LS5MI01-D30 PA is also available with the standard 0 dBm (1 mW) input drive level (P/N: NW-PA-LS-5-MI01), for typical communication systems.

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

Features

- 5 Watts RF Output Power
- 1.0 GHz to 2.5 GHz
- Miniature Package (1.80" x 1.80" x 0.50")
- 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 1 & 2
- Unmanned Ground Vehicles (UGV)
- Broadband RF Telemetry
- RF Communication Systems
- Software Defined Radios
- Test Labs

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NuPower™ LS5MI01-D30 Power Amplifier

Specifications

Absolute Maximums

Parameter	Rating	Unit
Max Device Voltage	32	V
Max Device Current	2.4	A
Max RF Input Power, $Z_L = 50\ \Omega$	33	dBm
Max Operating Temperature (ambient)	60	℃
Max Operating Temperature (baseplate)	85	℃
Max Storage Temperature	85	℃

Export Classification
EAR99

Electrical Specifications @ 28 VDC, 25 ℃, Z_S=Z_L=50 Ω

Parameter	Symbol	Min	Typ	Max	Unit	Condition
Operating Frequency	BW	1.0		2.5	GHz	
RF Output Power	P_{SAT}	5	7		W	Pin = 0 dBm
Output Power @ 1dB Compression	P1dB				dBm	
Small Signal Gain	G		7		dB	Pin = -30 dBm
Small Signal Gain Flatness	ΔG		± 3		dB	Pin = -30 dBm
Power Gain Flatness			± 1		dB	Pin = 0 dBm
Input VSWR	VSWR		1.8	3.5		
Nominal Input Drive Level	P_{IN}		+30	+33	dBm	
Operating Voltage	VDC	26	28	30	V	
Quiescent Current	I_{DQ}		0.35		A	Bias enabled
Operating Current	I_{DD}		0.85	1.25	A	Pin = 0 dBm
Module Efficiency			30		%	
Third Order Order Intercept Point (Two tone test at 1 MHz spacing, Pout = 20 dBm / tone)	OIP3				dBm	
Harmonics	2nd		-13		dBc	
	3rd					
Output Mismatch (No Damage)				10:1		No damage at all phase angles

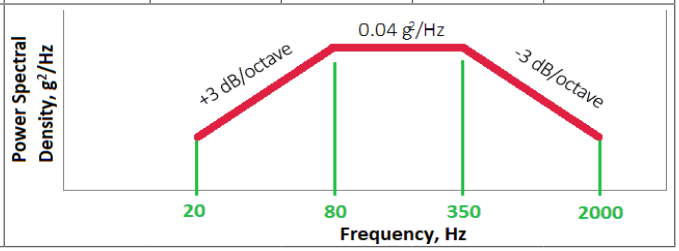
NuPower™ LS5MI01-D30 Power Amplifier

Specifications (cont.)

Mechanical Specifications

Parameter	Value	Unit	Limits
Dimensions	1.80 x 1.80 x 0.50	in	Max
Weight	1.3	oz	Max
RF Connectors, Input/Output	SSMC Female		
Interface Connector	Micro-D, 9-pin Socket		
Cooling	Adequate Heatsink Required		

Environmental Specifications

Parameter	Symbol	Min	Typ	Max	Unit
Operating Temperature (ambient)	T_A	-30		+60	°C
Operating Temperature (baseplate)	T_C	-30		+85	°C
Storage Temperature	T_{STG}	-40		+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)					

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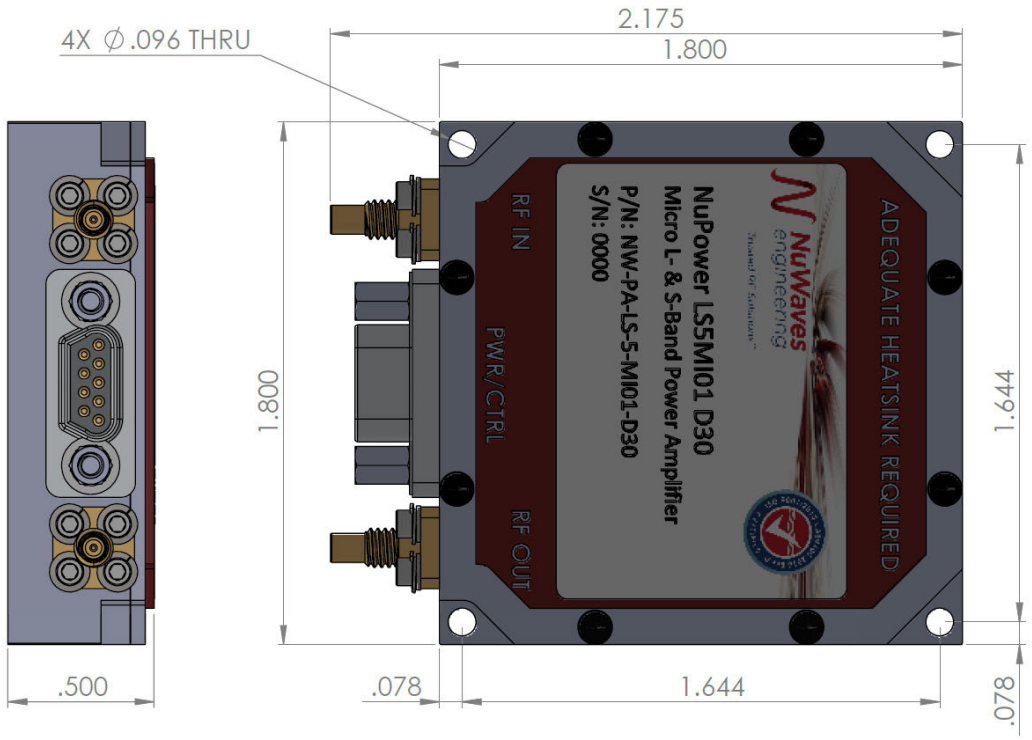
Mechanical Outline



Accessory Part Numbers - Sold Separately

Part Number	Description
NW-FL-05LPLE-2500-SFSF-M01	Harmonic Filter Module
NW-PA-ACC-CB09MF	Standard Interface Cable Assembly - Flying Leads
NW-PA-ACC-CT09MF	Upgraded Interface Cable Assembly - Banana Plug Termination
HTSK-01	Heatsink with Integrated Fan

Pinout

Function	I/O	Pin
Ground	I	1, 2
DC Power (+28 VDC)	I	3, 4
RF Enable 0 V or GND = RF ON +5V or NC = RF OFF	I	5
No Connect	-	6, 7 & 9
Over Temperature Flag 0V = temperature fault +5V = no fault	O	8

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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