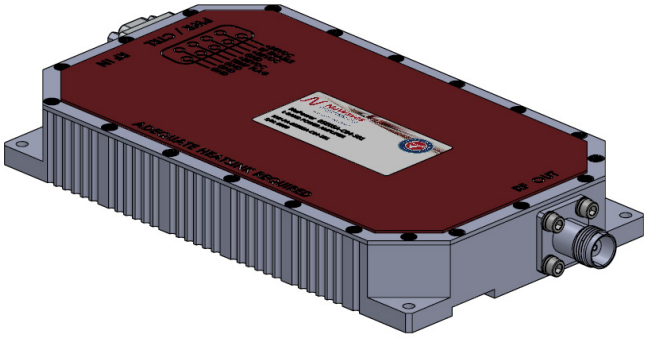
NuWaves
RF Solutions

NuPower™ 05E05A-C04-S01

S-Band Solid State Power Amplifier

35 Watts (CW)
2294.75 ± 1 MHz



P/N: NW-PA-05E05A-C04-S01

The NuPower™ 05E05A-C04-S01 is a small, power efficient, connectorized solid state power amplifier that provides 35 Watts (min) of RF power to boost performance of data links and transmitters.

The NuPower 05E05A-C04-S01 accepts a nominal 0 dBm (1 mW) RF input and provides >45 dB of gain from 2293.75 MHz to 2295.75 MHz for continuous wave (CW) and near-constant-envelope waveforms.

Based on the latest gallium nitride (GaN) technology, the NuPower 05E05A-C04-S01's 35% power efficiency at rated power and <10 in^3 form factor make it ideal for size, weight, and power-constrained broadband RF telemetry, tactical communication, and electronic warfare systems.

NuPower PAs feature over-voltage protection and can operate over a wide temperature range of -40 °C to +85 °C (baseplate).

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

Features

- 38 Watts RF Output Power (typ)
- 2293.75 - 2295.75 MHz
- Vented Chassis
- High-Efficiency GaN Technology
- Nickel Plated Micro D Interface Connector
- 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

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NuPower™ 05E05A-C04-S01 Power Amplifier

Specifications

Absolute Maximums

Parameter	Rating	Unit
Max Device Voltage	32	V
Max Device Current	4.5	A
Max RF Input Power, $Z_L = 50\ \Omega$	12	dBm
Max Operating Temperature (ambient)	70	℃
Max Operating Temperature (baseplate)	85	℃
Max Storage Temperature	85	℃

Export Classification
EAR99

Electrical Specifications

@ 28 VDC, 25 ℃, Z_S=Z_L=50 Ω, CW, Pin=0 dBm, 2294.75 MHz, Unless Otherwise Stated

Parameter	Symbol	Min	Typ	Max	Unit	Condition
Operating Frequency	BW	2293.75		2295.75	MHz	
RF Output Power	P_{SAT}	35	38		W	
Output Power @ 1dB Compression	P1dB		31		dBm	
Small Signal Gain	G		53		dB	2294.75 MHz, @ -40 dBm Input
Small Signal Gain Flatness	ΔG		±0.5		dB	Pin = -40 dBm
Input VSWR	VSWR		2.2:1			
Nominal Input Drive Level	P_{IN}		0		dBm	
Operating Voltage	VDC	27	28	32	V	
Quiescent Current (unbiased)	I_{DQ}		0.10		A	RF Off (RF Enable Floating)
Quiescent Current (biased)	I_{DQ}		0.65		A	RF On (RF Enable Low)
Operating Current	I_{DD}		4.0		A	
Module Efficiency			34		%	
Switching Speed	$TX_{ON/OFF}$			2	µS	10% to 90%
Third Order Order Intercept Point (Two tone test at 1 MHz spacing, Pout = 20 dBm / tone)	OIP3		45		dBm	2294.75 MHz
Harmonics	2nd		-22		dBc	
	3rd		-26			
Output Mismatch (No Damage)				10:1	Ψ	No Damage at All Phase Angles

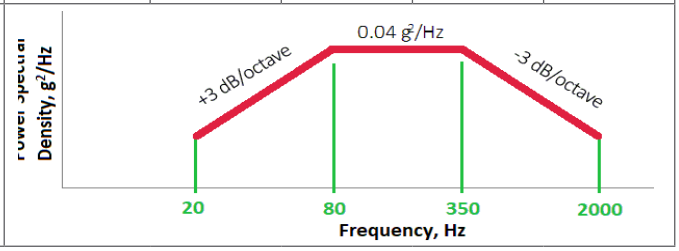
NuPower™ 05E05A-C04-S01 Power Amplifier

Specifications (cont.)

Mechanical Specifications

Parameter	Value	Unit	Limits
Dimensions (Vented Chassis Bottom)	6.0 x 3.5 x 0.9	in	Max
Weight	TBD	oz	Max
RF Connectors, Input	SMA Female		
RF Connector, Output	TNC Female		
Interface Connector (Nickel Finish)	Micro-D, 9-pin Socket		
Cooling	Adequate Heatsink Required		

Environmental Specifications

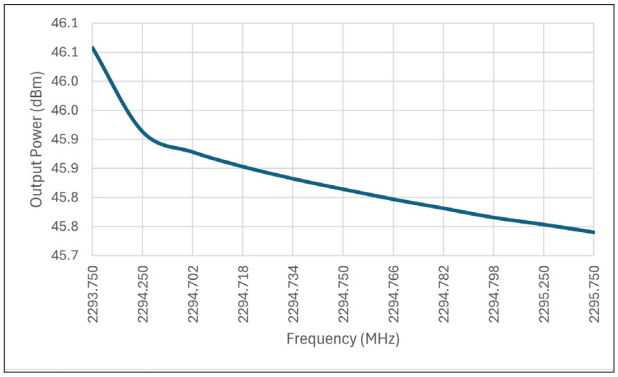
Parameter	Symbol	Min	Typ	Max	Unit
Operating Temperature (ambient)	T_A	-40		+70	℃
Operating Temperature (baseplate)	T_C	-40		+85	℃
Storage Temperature	T_{STG}	-55		+85	℃
Relative Humidity (non-condensing)	RH			95	%
Altitude MIL-STD-810F - Method 500.4	ALT			30,000	ft
Vibration / Shock Profile (Random profile in x,y, z axis, as per Figure for 15 minute duration in each axis)					

NuPower™ 05E05A-C04-S01 Power Amplifier

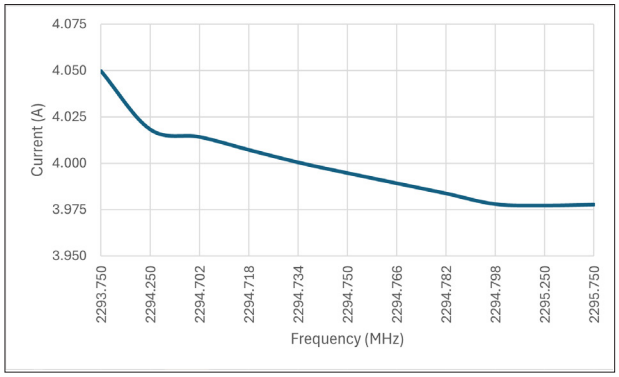
Performance Plots

Test Conditions: +28 VDC, +25 °C, Z_S=Z_L=50 Ω, CW, Pin = 0 dBm, Unless Otherwise Stated

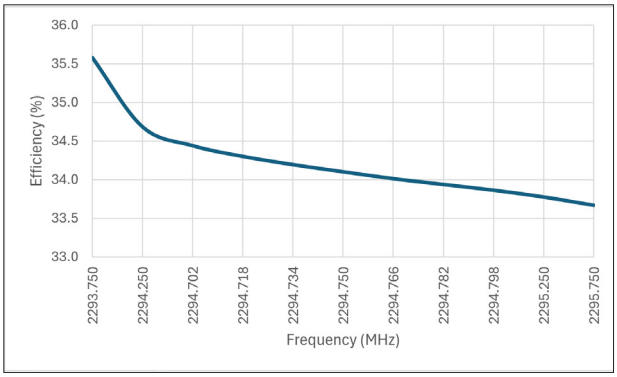
Output Power @ Nominal Input Drive



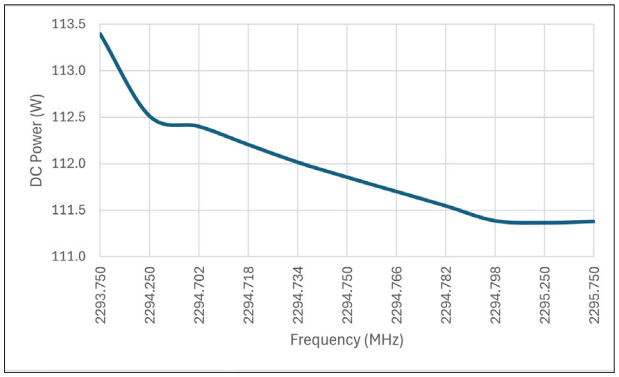
Current Consumption



Efficiency

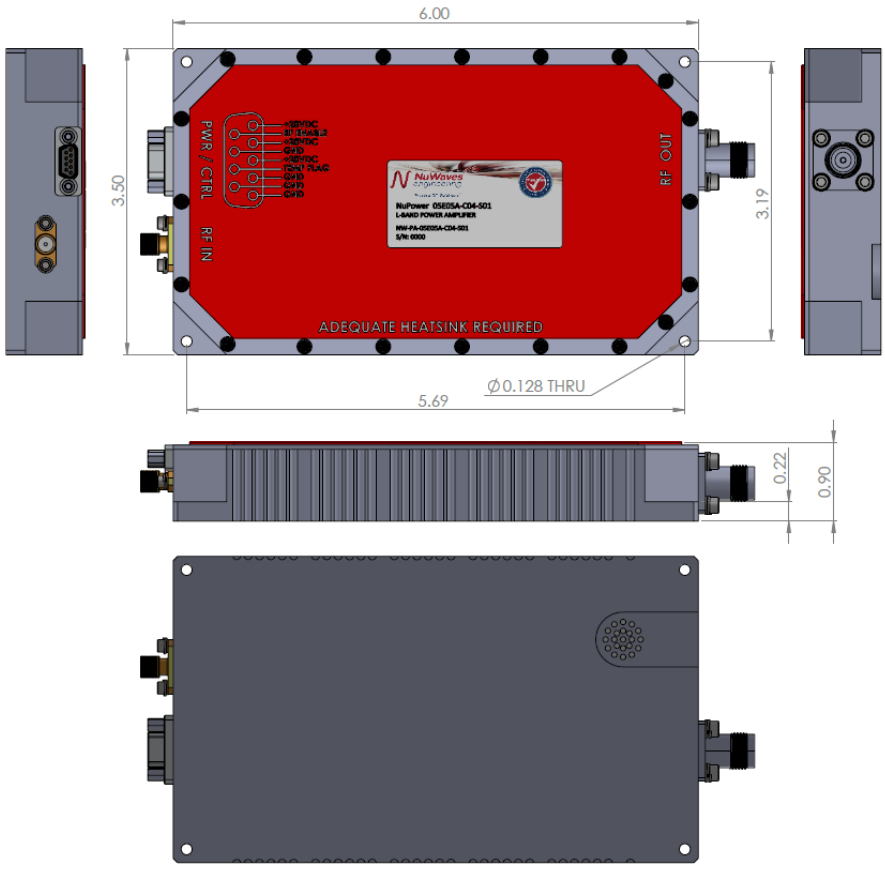


Power Consumption



NuPower™ 05E05A-C04-S01 Power Amplifier

Mechanical Outline



Accessory Part Numbers

Part Number	Description
NW-FL-05LPLE-2500-SFSF-M01	Harmonic Filter Module (sold separately)
NW-PA-ACC-CB09MC	Standard Interface Cable Assembly - Flying Leads (sold separately)
NW-PA-ACC-CT09MC	Upgraded Interface Cable Assembly - Banana Plug Termination (sold separately)

Pinout

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

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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