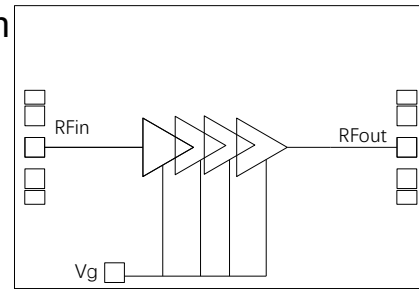


Performance characteristics **GaN MMIC Power Amplifier Chip, 0.2-2.5 GHz**

- Frequency range: 0.2~2.5GHz
- Psat: 40dBm
- Power gain: 12dB
- Power supply: 28V/-2.7V
- 50ohm input/output
- Chip size:3.00mm×1.50mm×0.1mm

Block Diagram



Product Introduction

GPA0.2-2-40 is a power amplifier chip manufactured using GaN HEMT technology. The working frequency band covers 0.2-2.5GHz, and under a supply voltage of 28V, it can provide a power gain of 12dB, with a saturated output power greater than 40dBm. The chip is grounded through the back through-hole. Mainly used in communication systems, high-power transceiver components, and other fields.

DC electrical specifications ($T_A=+25^\circ\text{C}$)

Parameter	Min	Typ	Max	Unit
Gate bias voltage	-3.5	-2.7	-2.5	V
Drain working voltage		28		V
Quiescent drain current		0.35		A
Dynamic drain current		1		A

Microwave electrical specifications ($T_A=+25^\circ\text{C}$, $V_d=+28\text{V}$, $I_{dd}=0.35\text{A}$, Continuous wave)

Parameter	Min	Typ	Max	Unit
Frequency range	0.2~2.5			GHz
Psat		40		dBm
PAE	43		84	%
Small signal gain	12	13	13.4	dB
Small signal gain flatness		± 0.7		dB
Input/output return loss		-14/-6		dB

Absolute maximum ratings^[1]

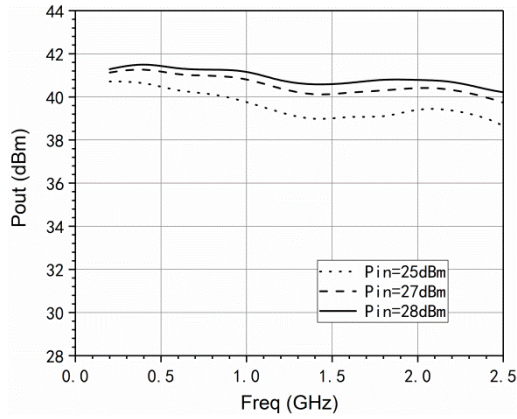
Parameter	Ratings
Drain voltage	+30V
Input power	30dBm
Operating temperature	-55°C~+85°C
Storage temperature	-65°C~+120°C

[1] Exceeding any of these limits may cause permanent damage.

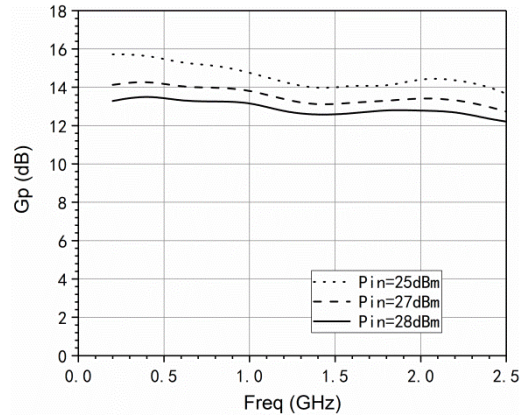
GaN MMIC Power Amplifier Chip, 0.2-2.5 GHz

Typical performance curve ($T_A=+25^\circ\text{C}$, $V_d=+28\text{V}$, $I_{dd}=0.35\text{A}$, continuous wave)

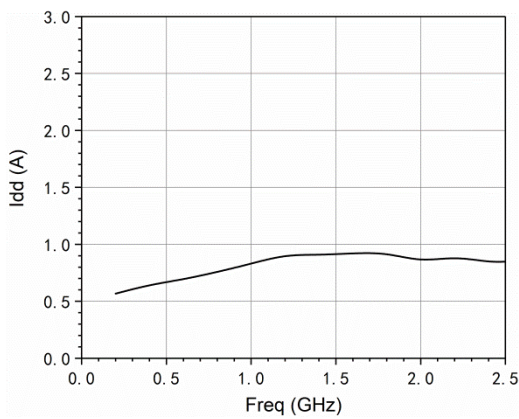
Output power vs. Frequency



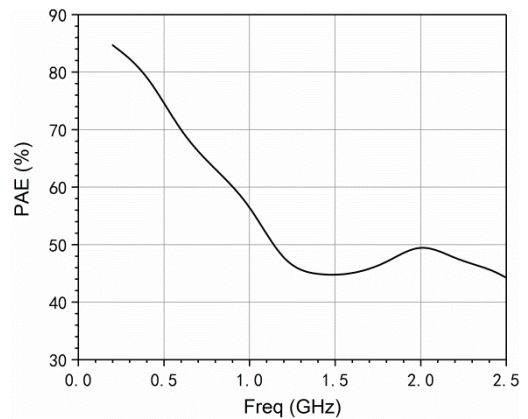
Power gain vs. Frequency



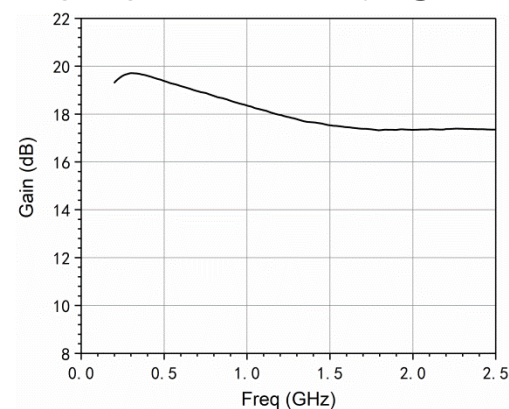
Dynamic current vs. Frequency (@Pin=28dBm)



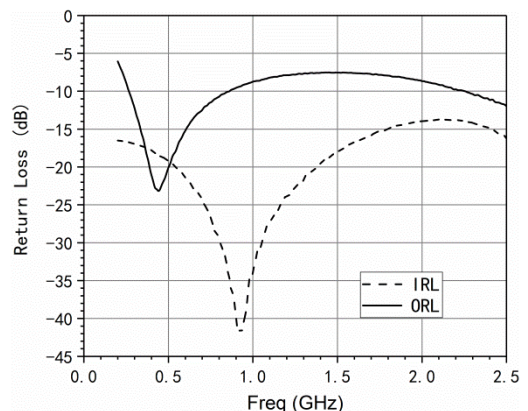
PAE vs. Frequency (@Pin=28dBm)



Small signal gain vs. Frequency (@Pin=-25dBm)

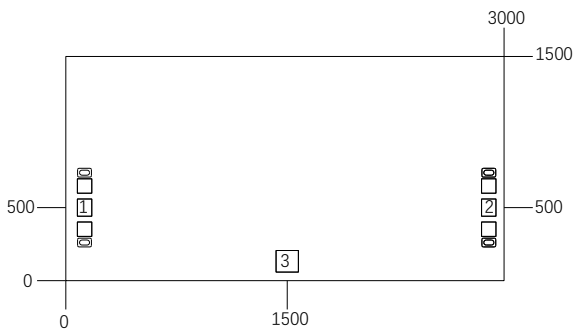


Input/output return loss vs. Frequency



GaN MMIC Power Amplifier Chip, 0.2-2.5 GHz

Outline dimensions



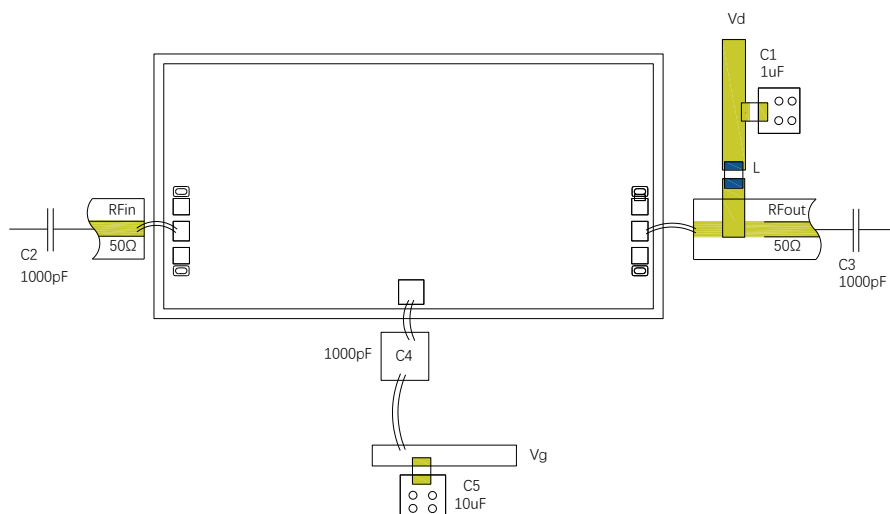
Notes:

1. Unit: μm
2. Gold plating on bonding pads
3. Dimensional tolerance: $\pm 20 \mu\text{m}$

Pad definition

Pad Number	Function	Description	Dimensions
1	IN	RF input, external 50 ohm system, no need for external blocking capacitor	$100 \times 120 \mu\text{m}$
2	OUT/Vd	RF output/drain power supply, external 50 ohm system, requiring external blocking capacitor	$100 \times 120 \mu\text{m}$
3	Vg	Gate power supply , voltage around -2.7V, current 0.35A	$150 \times 150 \mu\text{m}$

Suggested assembly diagram



Component	Recommended values
L	330nH
C1、C2	1000pF
C1	1uF
C4	1000pF
C5	10uF

Note: To ensure more stable performance of the amplifier, it is recommended to weld ceramic capacitors with the recommended capacitance values in the above assembly diagram at the feeding end for filtering. The number of filtering capacitors can also be increased or different capacitance values can be combined according to actual needs.