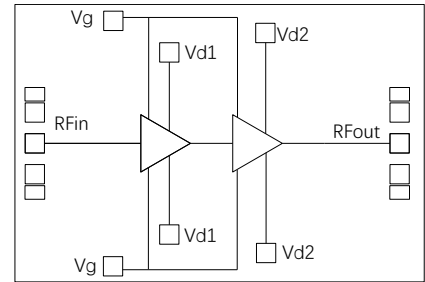


Performance characteristics **GaN MMIC Power Amplifier Chip, 2.0-6.0 GHz**

- Frequency range: 2~6GHz
- Psat: 46.5dBm (pulse) /45dBm (Continuous wave)
- Power gain: 21dB (pulse) /18dB (Continuous wave)
- Power supply: 28V/-2.6V (pulse) /24V/-2.65V (Continuous wave)
- 50ohm input/output
- Chip size: 4.05mm×4.00mm×0.1mm

Block Diagram



Product Introduction

GPA2-6-46 is a power amplifier chip manufactured using GaN HEMT technology. The working frequency band covers 2.0~6.0GHz and can operate under pulse (+28V power supply) and continuous wave (+24V power supply) conditions. Under a pulse supply voltage of 28V, it can provide a power gain of 21dB and a saturated output power greater than 46.5dBm. Under a continuous wave 24V supply voltage, it can provide a power gain of 18dB and a saturated output power greater than 45dBm. The chip is grounded through the back through-hole. Mainly used in high-power transceiver components and other fields.

Direct current parameters (TA=+25 °C, CW)

Parameter	Min	Typ	Max	Unit
Gate bias voltage		-2.65		V
Drain working voltage		24		V
Quiescent drain current		2.45		A
Dynamic drain current		4.4		A

Microwave electrical specifications (TA=+25°C, Vd=+24V, Vg=-2.65V, CW)

Parameter	Min	Typ	Max	Unit
Frequency range	2.0~6.0			GHz
Psat		45		dBm
PAE	33	35	45	%
Power gain (@Pin=27dBm)	18			dB
Power gain flatness		±0.5		dB
Input/Output return loss		-13/-8		dB

Absolute maximum ratings^[1]

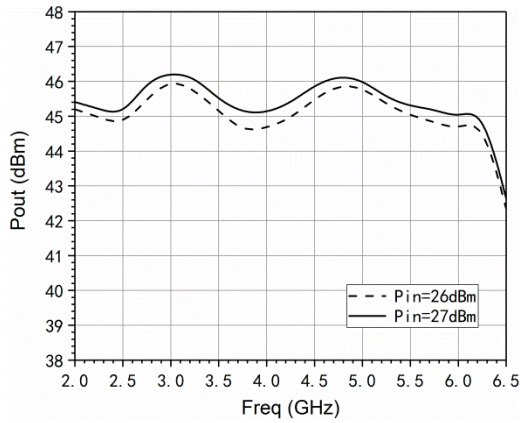
Parameter	Ratings
Drain voltage	+30V
Input power	30dBm
Operating temperature	-55°C~+85°C
Storage temperature	-65°C~+120°C

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

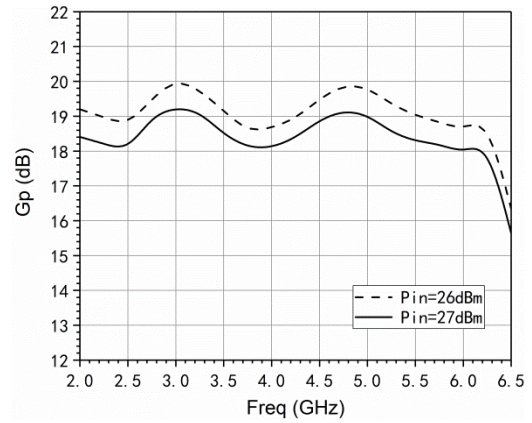
GaN MMIC Power Amplifier Chip, 2.0-6.0 GHz

Typical performance curves (Vd: +24V, Vg=-2.65V, quiescent current: 2.45A, CW)

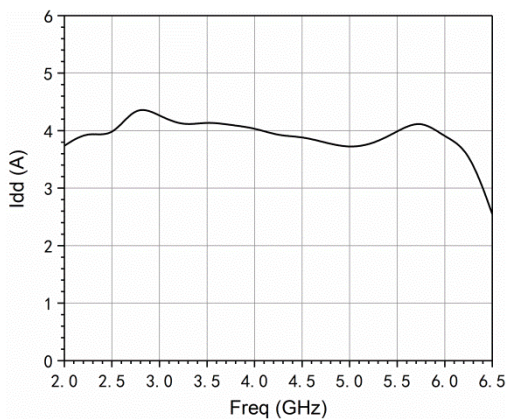
Output power vs. frequency



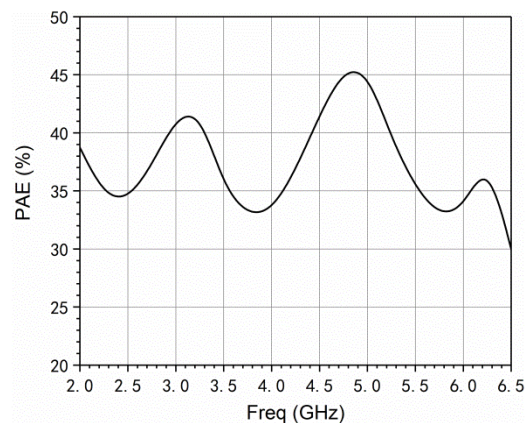
Power gain vs. frequency



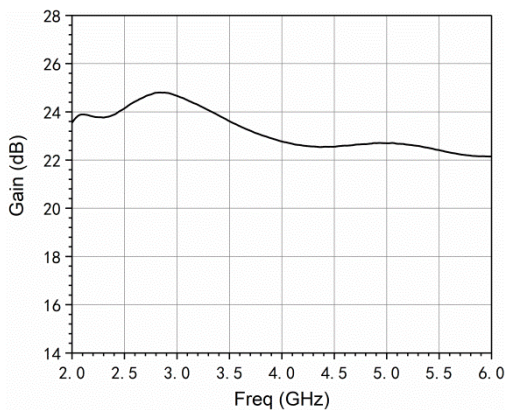
Dynamic current vs. frequency(@Pin=27dBm)



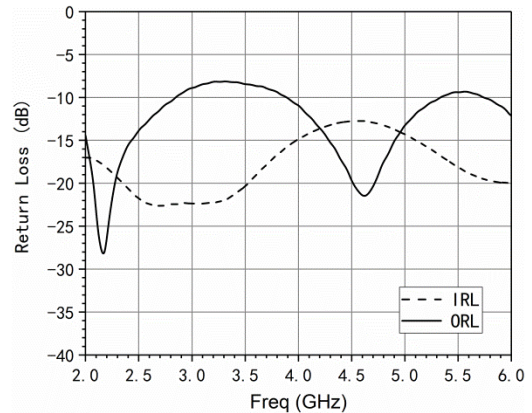
Power added efficiency vs. frequency(@Pin=27dBm)



Small signal gain vs. frequency (@Pin=-10dBm)



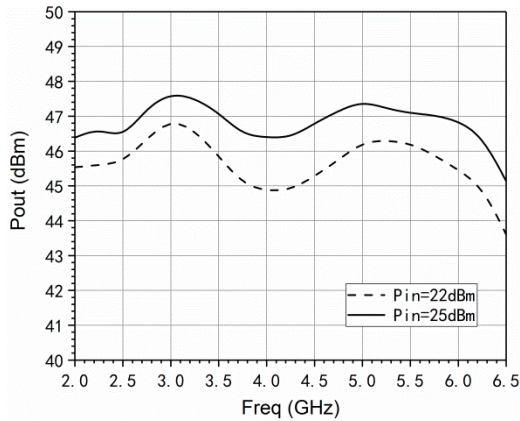
Input/output return loss vs. frequency



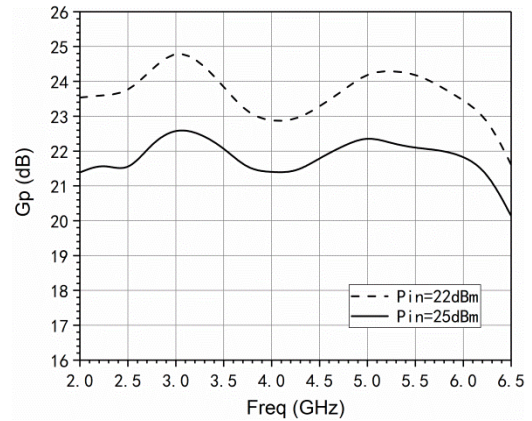
GaN MMIC Power Amplifier Chip, 2.0-6.0 GHz

Typical performance curves (Vd: +28V, Vg=-2.6V, duty cycle 30%, cycle 1ms)

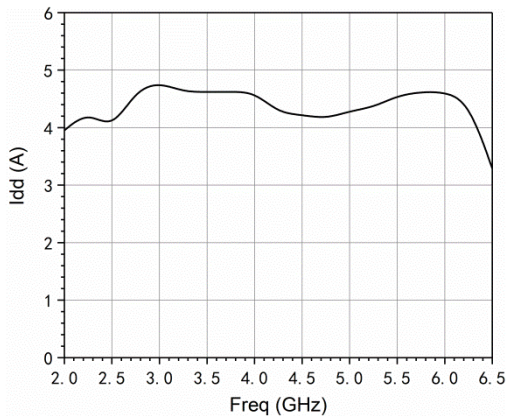
Output power vs. frequency



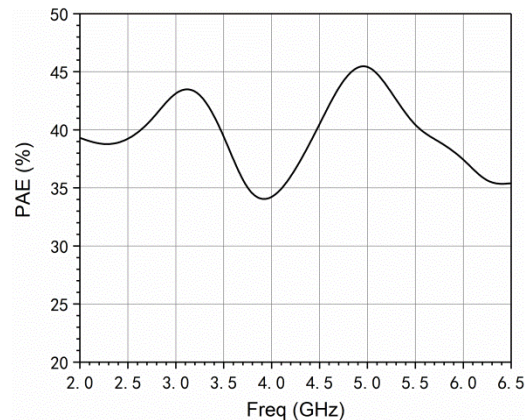
Power gain vs. frequency



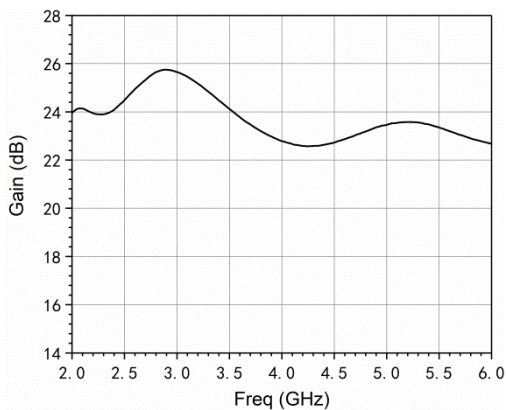
Dynamic current vs. frequency (@Pin=25dBm)



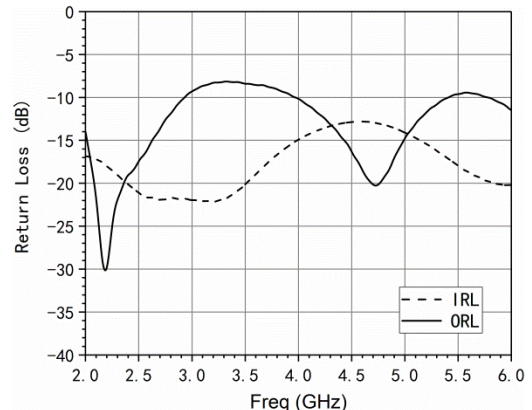
Power added efficiency vs. frequency (@Pin=25dBm)



Small signal gain vs. frequency (@Pin=-10dBm)

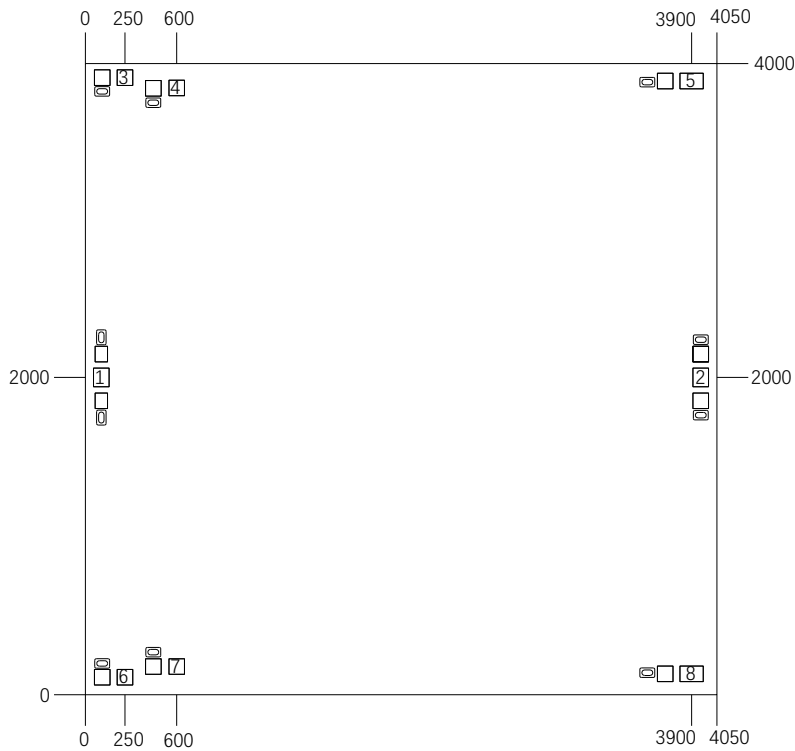


Input/output return loss vs. frequency



GaN MMIC Power Amplifier Chip, 2.0-6.0 GHz

Outline Dimensions



Notes:

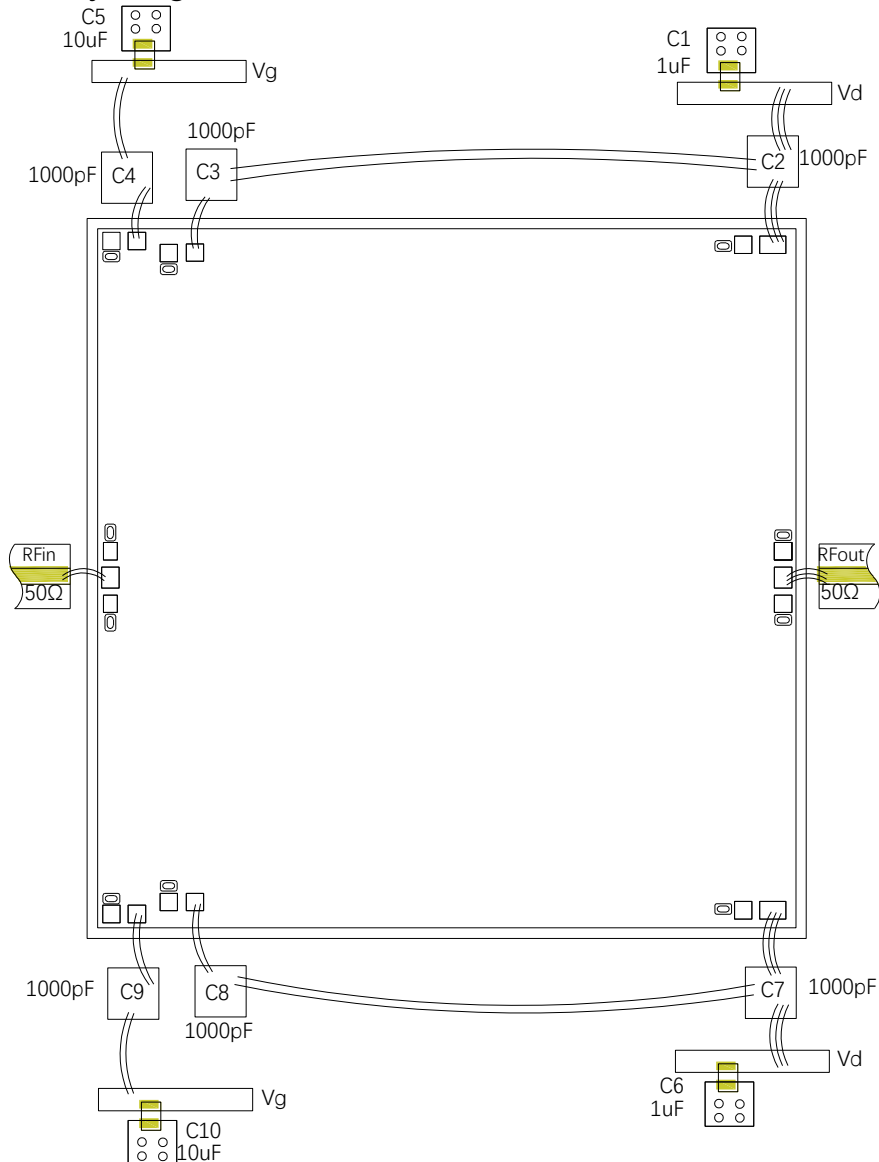
1. Unit: μm
2. Gold plating on bonding pads
3. Dimensional tolerance: $\pm 20 \mu\text{m}$

Pad Definition

Pad Number	Function	Description	Dimensions
1	IN	RF input, external 50 ohm system, no need for external blocking capacitor	100 × 120 μm
2	OUT	RF output terminal, external 50 ohm system, no need for blocking capacitor	100 × 120 μm
4、7	Vd	Drain power supply	100 × 100 μm
5、8	Vd	Drain power supply	150 × 100 μm
3、6	Vg	Drain power supply	100 × 100 μm

GaN MMIC Power Amplifier Chip, 2.0-6.0 GHz

Suggested assembly diagram



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. If using drain pulse modulation, the drain ceramic capacitor should be removed.

Note :

1. Please assemble and use in a purified environment, store in anti-static containers, and keep dry
2. The back of the chip is grounded with gold backing. Please ensure that the back is in full contact with the ground and well grounded during use
3. Use gold tin solder with a ratio of 80/20 to sinter, with a sintering temperature not exceeding 300 °C and a sintering time as short as possible, not exceeding 20 seconds
4. This product is an electrostatic sensitive device. Please pay attention to anti-static measures during storage and use
5. Do not attempt to clean the surface of the chip using dry or wet chemical methods
6. If you have any questions, please contact the supplier



This product is sensitive to static electricity. Please pay attention to anti-static measures during use