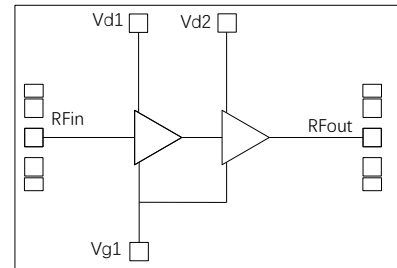


## GaN MMIC Power Amplifier Chip, 5.0-7.0 GHz

### Performance characteristics

- Frequency range: 5.0~7.0GHz
- Psat: 42dBm
- Power gain: 19dB
- Power supply: 28V/300mA
- 50ohm input/output
- Chip size: 2.0mm×1.5mm×0.1mm

### Block Diagram



### Product Introduction

GPA5-7-42A is a power amplifier chip manufactured using GaN HEMT technology. Continuous wave working mode, covering a frequency band of 5.0~7.0 GHz, can provide a power gain of 19 dB at a supply voltage of 28 V, with a saturated output power of 42 dBm. The chip is grounded through the back through-hole. Mainly used in communication systems, high-power transceiver components, and other fields.

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

Parameter	Min	Typ	Max	Unit
Gate bias voltage	-3	-2.7	-2	V
Drain working voltage		28		V
Quiescent drain current		0.3		A
Dynamic drain current		1.4		A

### Microwave electrical parameters ( $T_A=+25^{\circ}\text{C}$ , $V_d=+28\text{V}$ , static $I_{d0}=300\text{mA}$ , Continuous wave)

Parameter	Min	Typ	Max	Unit
Frequency range	5.0~7.0			GHz
Psat	42	42.5	43	dBm
PAE	45	55	62	%
Power gain	19	19	20	dB
Power gain flatness		$\pm 0.5$		dB
Input/output return loss		-12		dB

### Absolute maximum ratings<sup>[1]</sup>

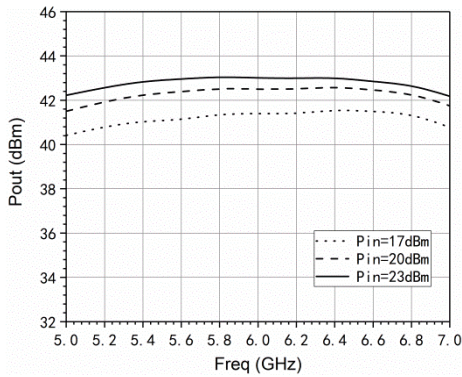
Parameter	Ratings
Drain voltage	+30V
Input power	30dBm
Operating temperature	-55 $^{\circ}\text{C}$ ~+85 $^{\circ}\text{C}$
Storage temperature	-65 $^{\circ}\text{C}$ ~+120 $^{\circ}\text{C}$

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

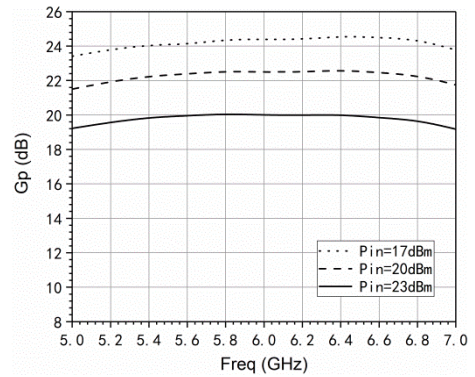
## GaN MMIC Power Amplifier Chip, 5.0-7.0 GHz

Typical performance curves (Vd: +28V, quiescent Id=300mA, Continuous wave)

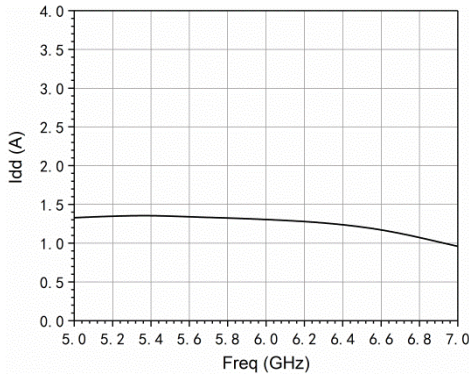
Output Power vs. frequency



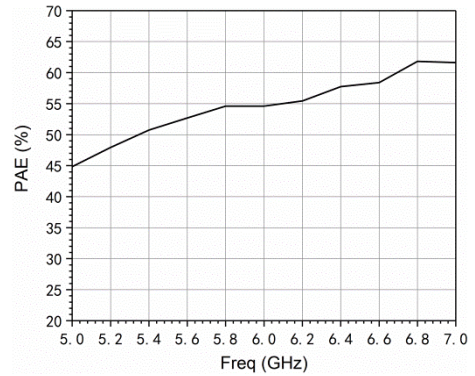
Power gain vs. frequency



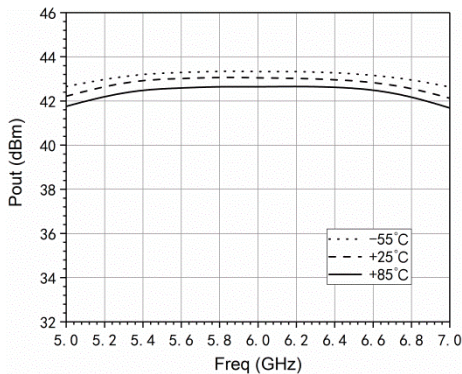
Dynamic current vs. frequency(@Pin=23dBm)



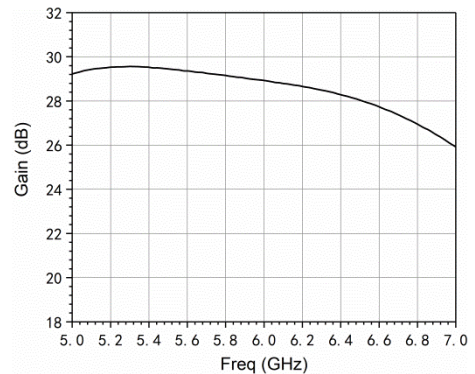
Power added efficiency vs. frequency(@Pin=23dBm)



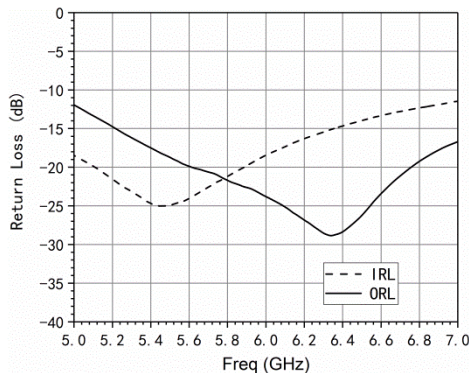
Three temperature output power vs. frequency (@Pin=23dBm)



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

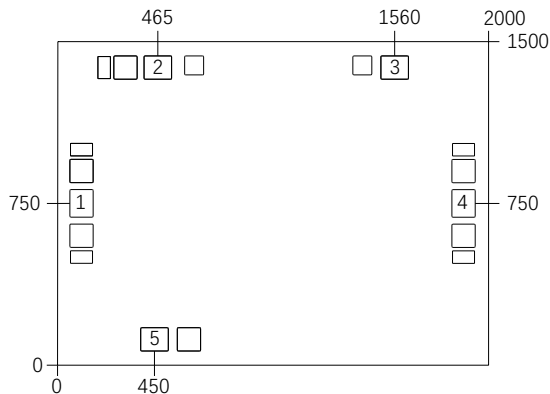


Input/output return loss vs. frequency



## GaN MMIC Power Amplifier Chip, 5.0-7.0 GHz

### Outline Dimensions



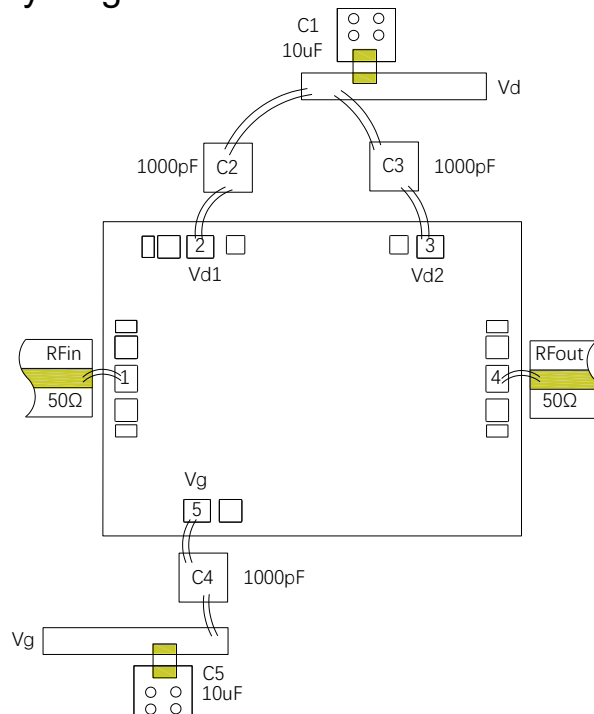
#### Notes:

1. Unit:  $\mu\text{m}$
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 terminal, external 50 ohm system, no need for external blocking capacitor	100×120 $\mu\text{m}$
4	OUT	RF output terminal, external 50 ohm system, no need for external blocking capacitor	100×120 $\mu\text{m}$
2、3	Vd	Drain power supply, 28V	120×100 $\mu\text{m}$
5	Vg	Gate power supply, -3V~-2V, which makes the quiescent current reach 300mA	120×100 $\mu\text{m}$

### 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.