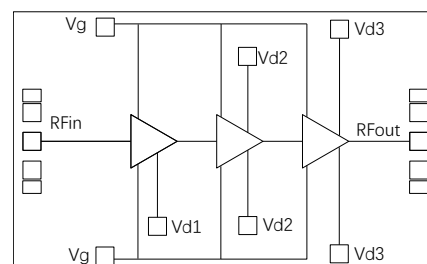


Performance characteristics **GaN MMIC Power Amplifier Chip, 14-18 GHz**

- Frequency range: 14.0~18.0GHz
- Psat: 41dBm
- PAE: 15dB
- Power supply: 28V
- 50ohm input/output
- Chip size: 3.1mm×2.2mm×0.1mm

Block Diagram



Product Introduction

GPA14-18-41 is a power amplifier chip manufactured using GaN HEMT technology. The working frequency band covers 14.0-18.0GHz, and can provide a power gain of 15dB at a supply voltage of 28V, with a saturated output power greater than 41dBm. The chip is grounded through the back through-hole. Mainly used in communication systems, high-power transceiver components, and other fields.

DC electrical specifications (TA=+25 °C)

Parameter	Min	Typ	Max	Unit
Gate bias voltage		-2.7		V
Drain working voltage		28		V
Quiescent drain current		850		mA
Dynamic drain current		1900		mA

Microwave electrical parameters(TA=+25°C, Vd=+28V, Vg: -2.7V, Pulse width 1ms, cycle 5ms, duty cycle 20%)

Parameter	Min	Typ	Max	Unit
Frequency range	14.0~18.0			GHz
Psat	41			dBm
PAE		30		%
Power gain		15		dB
Power gain flatness		±0.8		dB
Input/output return loss		-12		dB

Absolute maximum ratings^[1]

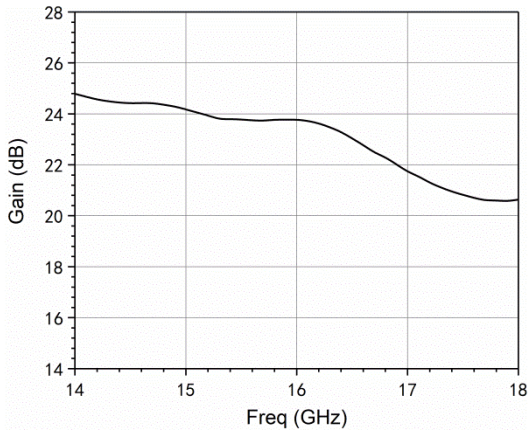
Parameter	Ratings
Drain voltage	+30V
Input power	+30dBm
Operating temperature	-55°C~+85°C
Storage temperature	-65°C~+120°C

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

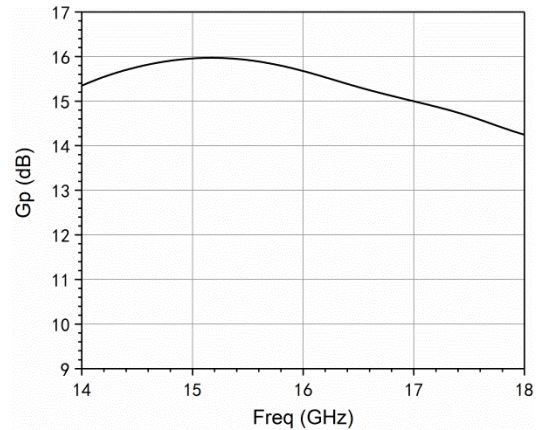
GaN MMIC Power Amplifier Chip, 14-18 GHz

Typical performance curves (V_d : +28V, V_g : -2.7V, quiescent I_d =850mA, pulse width 1ms, cycle 5ms, duty cycle 20%)

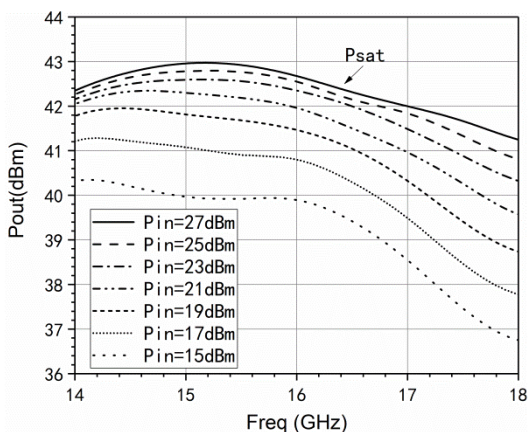
Gain VS. frequency (@Pin=-30dBm)



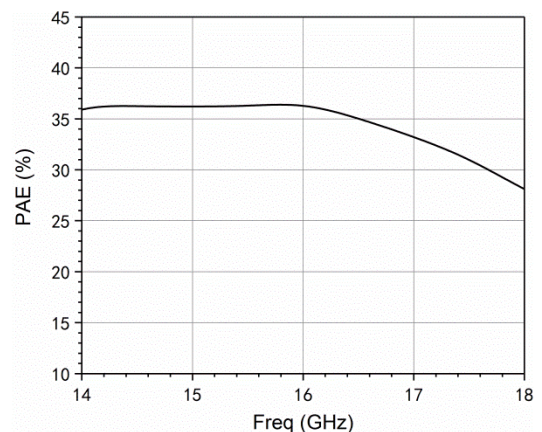
Power gain VS. frequency (@Pin=27dBm)



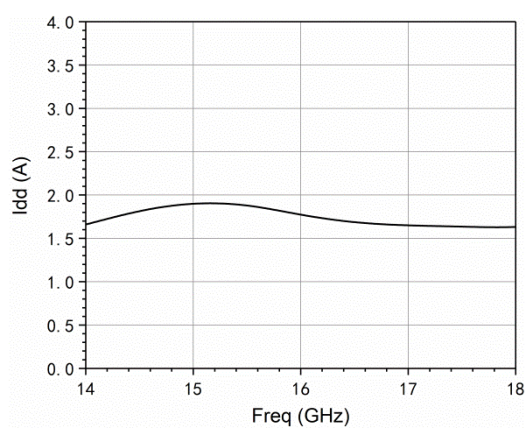
Output power VS. frequency



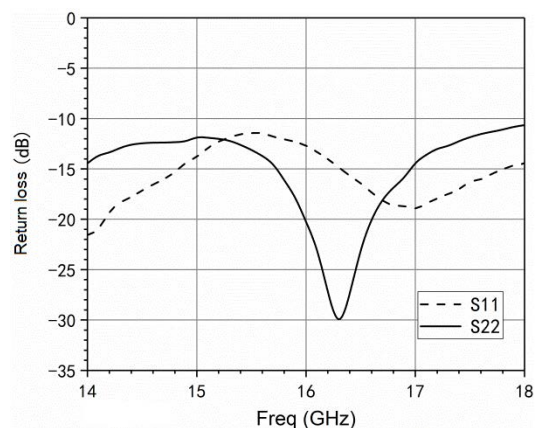
PAE VS. frequency (@Pin=27dBm)



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



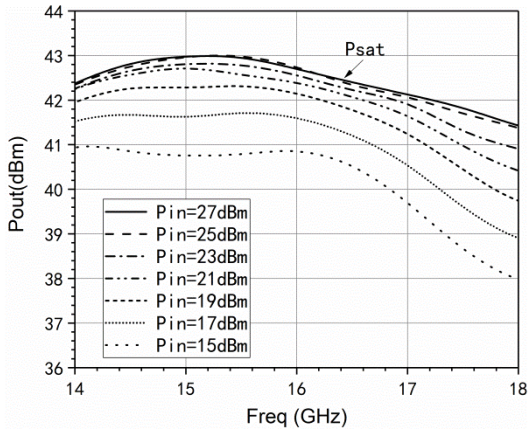
Input/output return loss VS. frequency



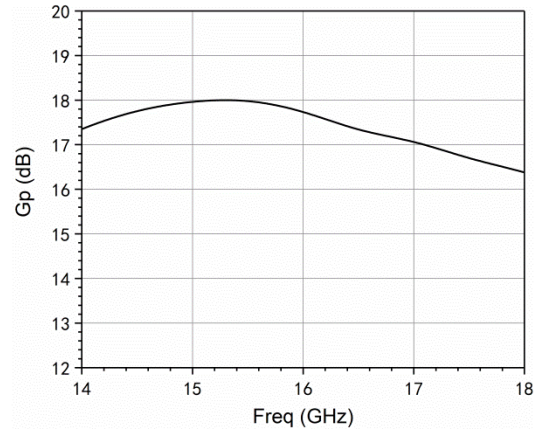
GaN MMIC Power Amplifier Chip, 14-18 GHz

Typical performance curves (Vd: +28V, Vg:-2.5V, quiescent Id=1.12A, pulse width 1ms, cycle 5ms, duty cycle 20%)

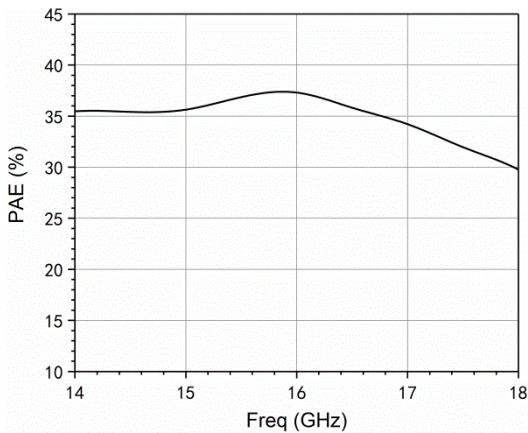
Output power VS. frequency



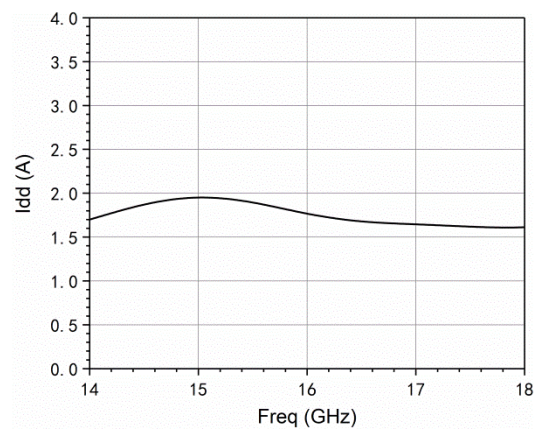
Power gain VS. frequency (@Pin=25dBm)



PAE VS. frequency (@Pin=25dBm)



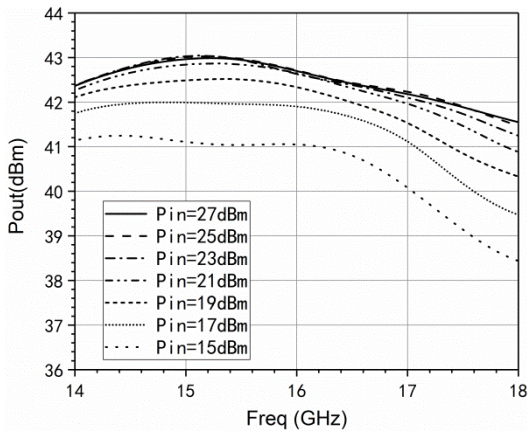
Dynamic current VS. frequency (@Pin=25dBm)



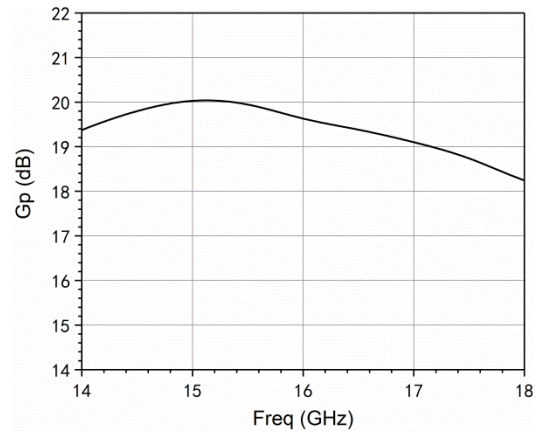
GaN MMIC Power Amplifier Chip, 14-18 GHz

Typical performance curves (V_d :+28V, V_g :-2.3V,quiescent I_d =1.4A,Pulse width 1ms,cycle 5ms,duty cycle 20%)

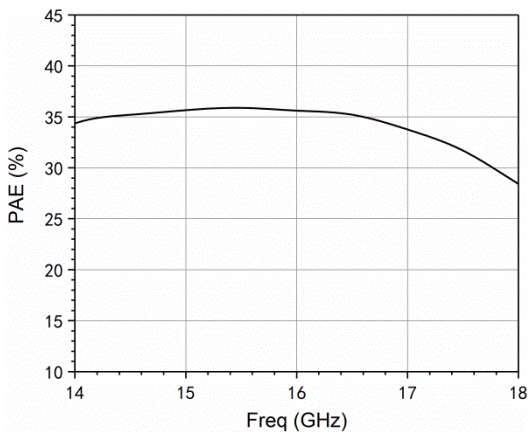
Input power VS. frequency



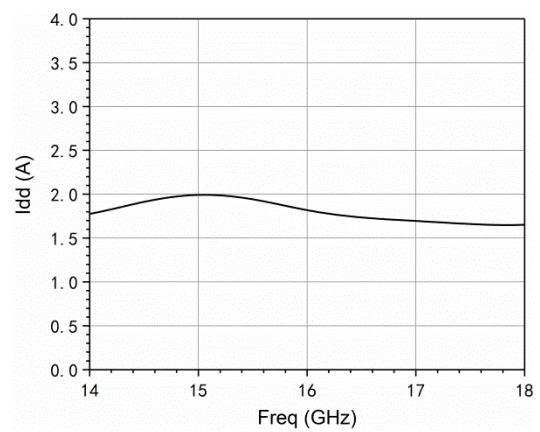
Power gain VS. frequency (@Pin=23dBm)



PAE VS. frequency (@Pin=23dBm)



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



Outline dimensions



Notes:

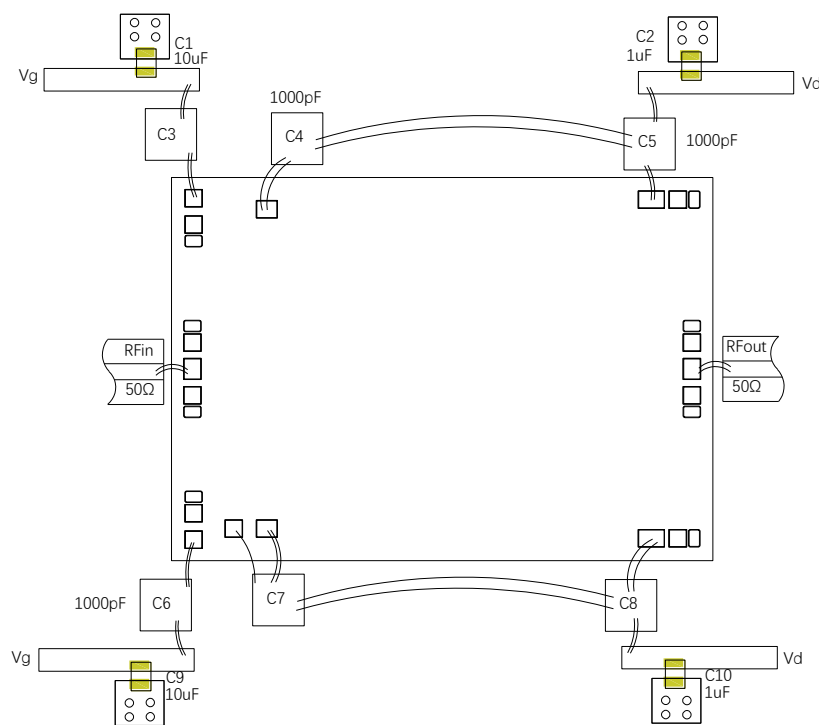
1. Unit: μm
2. Gold plating on bonding pads
3. Dimensional tolerance: $\pm 20\mu\text{m}$

GaN MMIC Power Amplifier Chip, 14-18 GHz

Pad Definition

Pad Number	Function	Description	Dimensions
1	IN	RF input, external 50 ohm system, no need for external blocking capacitor	100×100um
2	OUT	RF output, external 50 ohm system, no need for external blocking capacitor	100×100um
4、5、7、8、9	Vd	Drain power supply, 28V	100×100um
3、6	Vg	Gate power supply, -2.7V, quiescent current 650-750mA	100×100um

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 capacitors with different capacitance values can be combined according to actual needs. During pulse operation, ceramic capacitors can be omitted from the drain power supply Vd.

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