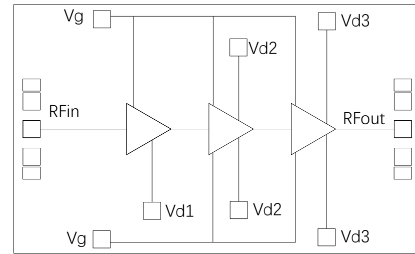
Performance characteristics

- Frequency range: 14.0~18.0GHz
- Psat: 40dBm
- Power supply: 28V/700mA
- 50ohm input/output
- Chip size: 3.0mm×2.0mm×0.1mm

Block Diagram



Product Introduction

GPA14-18-40 is a power amplifier chip manufactured using GaN HEMT technology. The working frequency band covers 14.0-18.0GHz, and under a supply voltage of 28V, the saturated output power is greater than 40dBm. The chip is grounded through via. Mainly used in communication systems, high-power transceiver components, and other fields.

DC electrical specifications (TA=+25 ℃)

Parameter	Min	Typ	Max	Unit
Gate bias voltage	-3	-2.6	-2.2	V
Drain working voltage		28		V
Quiescent drain current		700		mA
Dynamic drain current		1600		mA

Microwave electrical specifications （T_A=+25℃，Vd=+28V，CW test）

Parameter	Min	Typ	Max	Unit
Freqeuncy range	14.0~18.0			GHz
Psat	40			dBm
PAE		30		%
Power gain flatness		±1		dB
Input/output return loss		-12		dB

Absolute maximum ratings[1]

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

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

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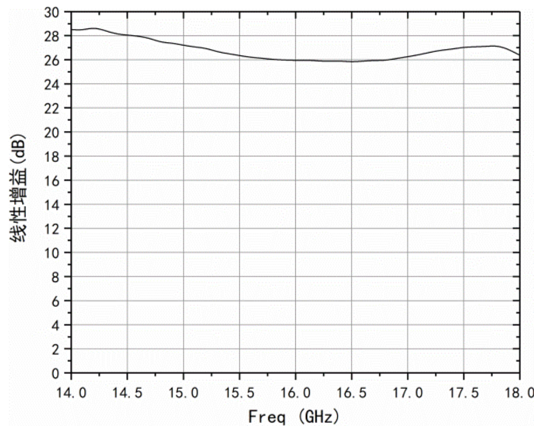
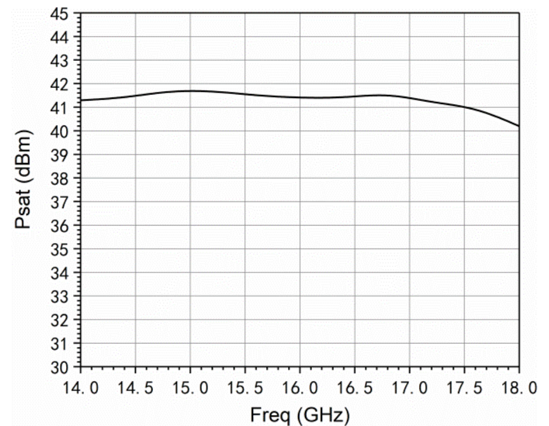
Typical performance curves（Vd：+28V，quiescent Id=700mA，CW test）

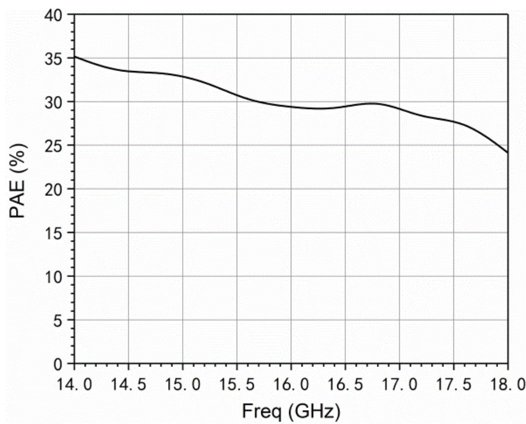
Gain VS. Frequency （@Pin=-25dBm）



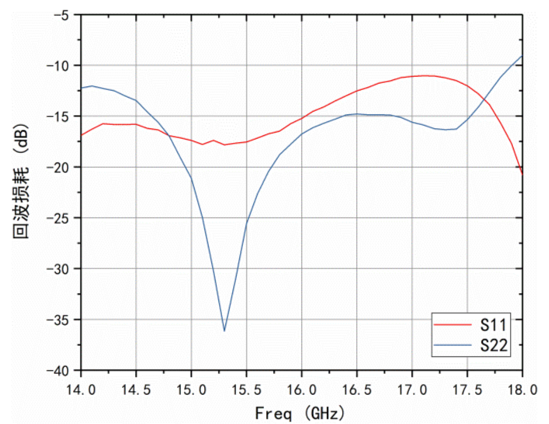
Psat VS. Frequency



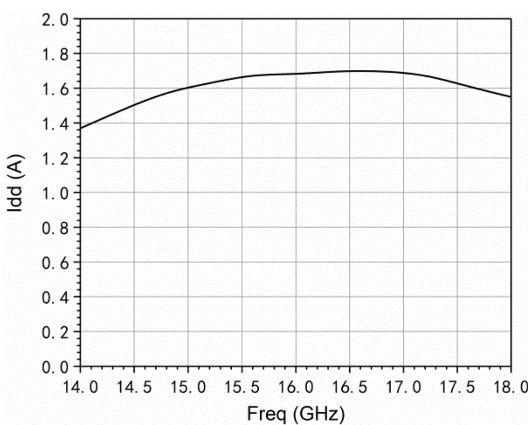
PAE VS. Frequency



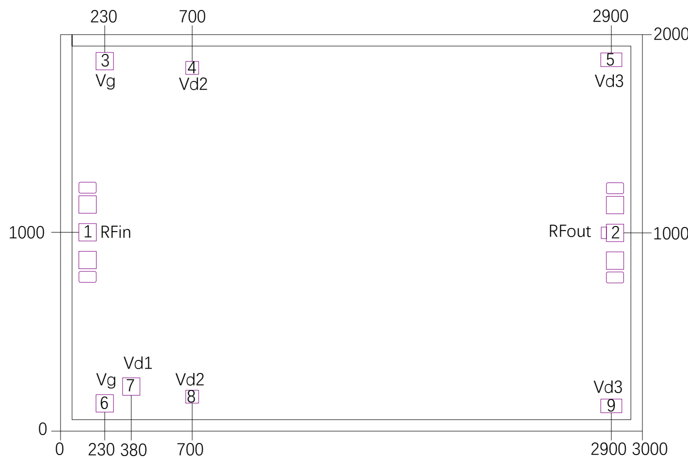
Return loss VS. Frequency



Idd VS. Frequency



Outline Dimensions



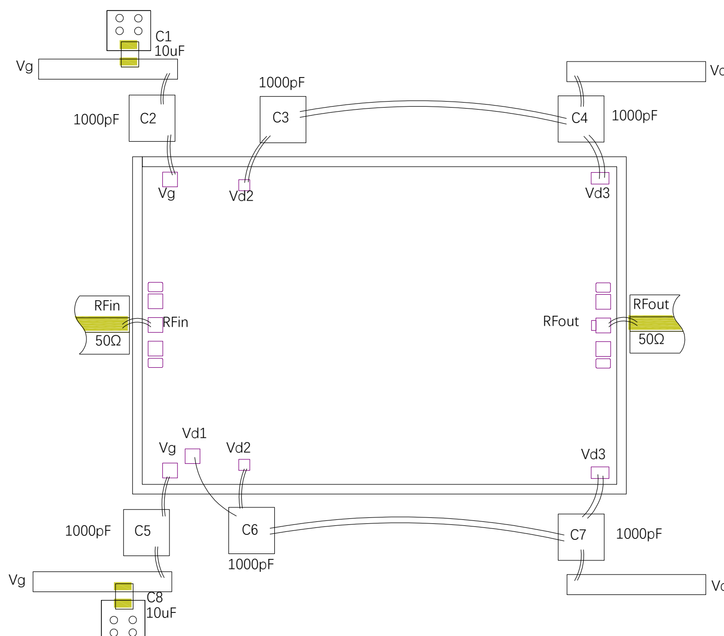
Notes:

1. Unit: μm
2. Gold plating on bonding pads
3. Dimensional tolerance: ± 20μm

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
3、6	Vd	Drain power supply, 28V	100×100um
4、5、7、8、9	Vg	Gate power supply, -2.6V, quiescent current 700mA	100×100um

Suggested assembly diagram



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.When using conductive silver adhesive for chip bonding, do not use too much conductive silver adhesive and do not touch the upper surface of the chip
4.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
5.This product is an electrostatic sensitive device. Please pay attention to anti-static measures during storage and use
6.Do not attempt to clean the surface of the chip using dry or wet chemical methods
7.If you have any questions, please contact the supplier

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.The figure shows the pulse working mode. In the continuous wave working mode, it is recommended to add a 1uF ceramic capacitor filter to the drain.