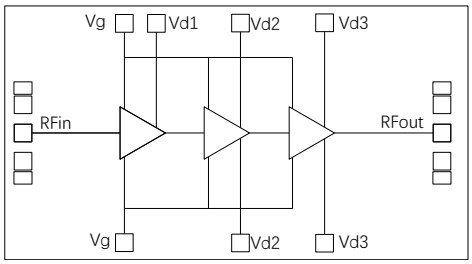
GPA13-14-43

GaAs MMIC Power Amplifier Chip, 13.0-14.0 GHz

Performance characteristics

- Frequency range：13~14GHz
- Small signal gain ：29dB
- Psat：43dBm
- Power supply：28V
- 50ohm input/output
- Chip size: 2.45mm×3.53mm×0.1mm

Block Diagram



Product Introduction

GPA13-14-43 is a power amplifier chip manufactured using GaN HEMT technology. The working frequency band covers 13-14GHz, and under a supply voltage of 28V, it can provide 29dB gain with a saturated output power of 43dBm. Ground the chip through the back through-hole. Mainly used in communication systems, high-power modules and other fields。

DC electrical parameters（T_A=+25℃）

Parameter	Min	Typ	Max	Unit
Gate bias voltage		-2.2		V
Drain working voltage		28		V
Quiescent drain current		1.1		A
Dynamic drain current		3		A

Microwave electrical parameters（T_A=+25℃，Vd=+28V）

Parameter	Min	Typ	Max	Unit
Frequency range	13~14			GHz
Psat	42.8	44	44	dBm
PAE	23	28	31	%
Small singal gain	29.2	30	31.2	dB
Small singal gain flatness		±1		dB
input return loss		-10		dB
output return loss		-15		dB

Absolute maximum ratings[1]

Parameter	Ratings
Drain voltage	+28V
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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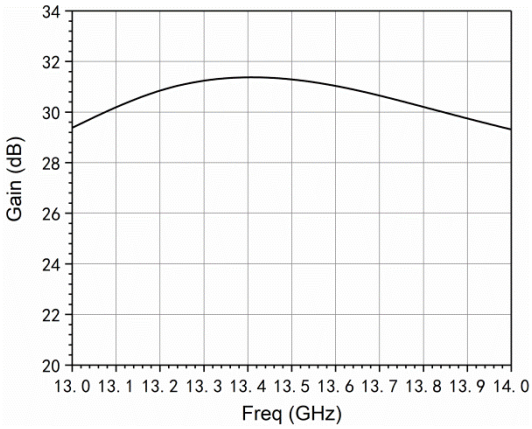
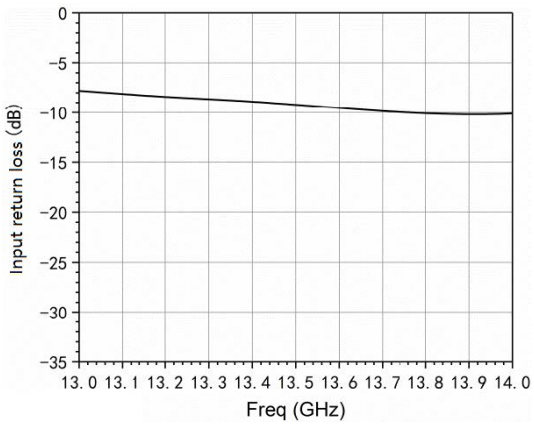
Typical performance curves（Vd：+28V）

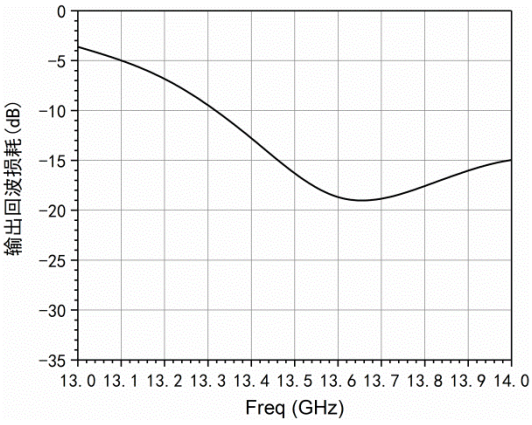
Gain VS. frequency



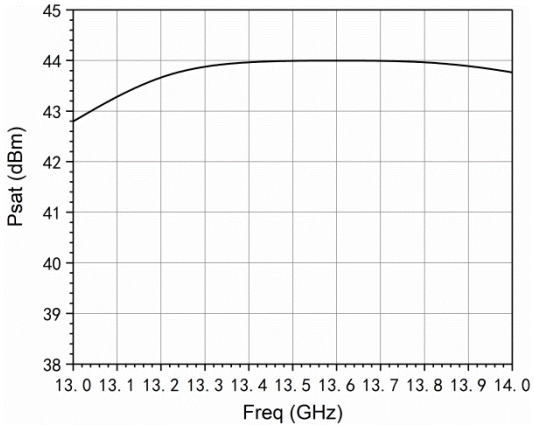
Input return loss vs. frequency



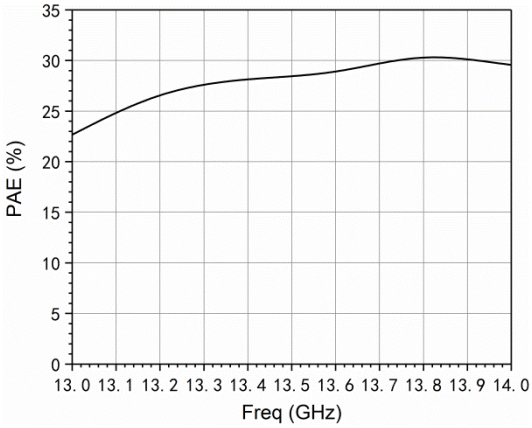
Output return loss vs. frequency



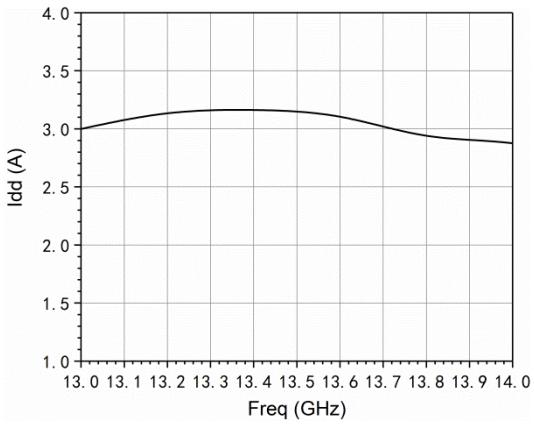
Saturated output power vs. frequency



PAE vs. frequency（@Psat）



Idd VS. frequency



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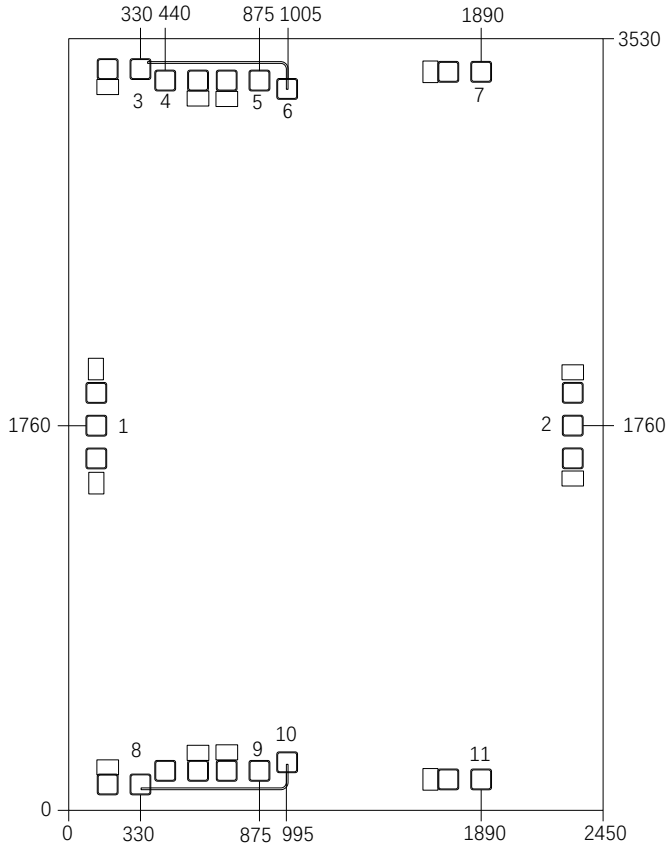
Outline Dimensions



Notes:

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

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、8、10	Vg	Drain power supply	100×100um
4、5、7、9、11	Vd	Gate power supply	100×100um

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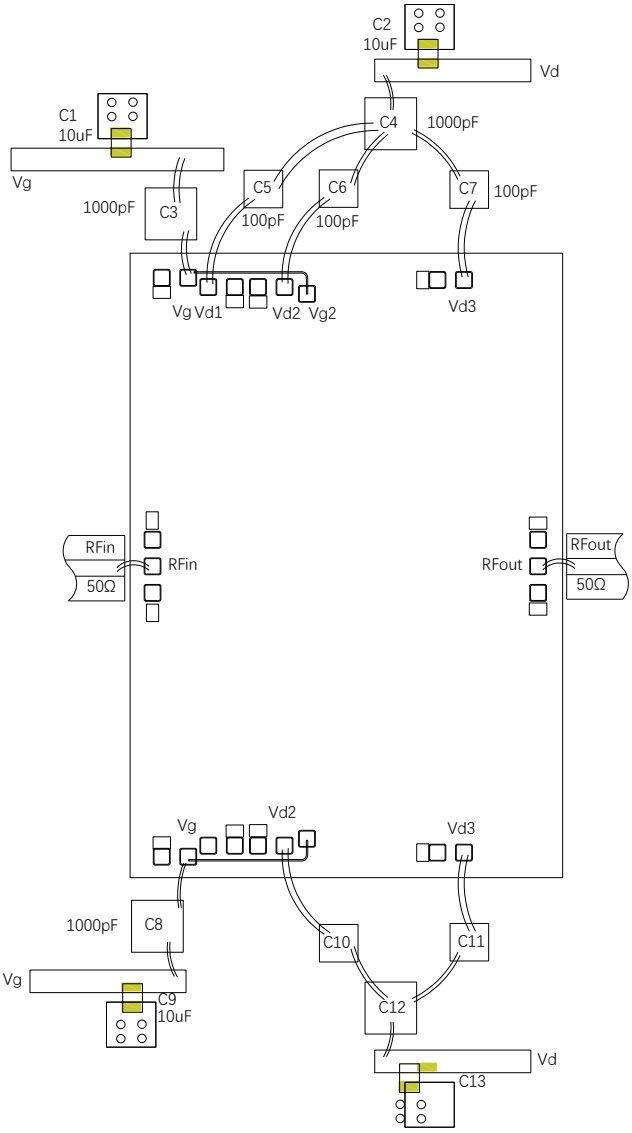
Suggested assembly diagram



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.

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

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