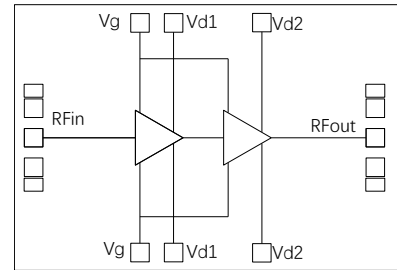


Performance characteristics **GaAs MMIC Power Amplifier Chip, 4-5 GHz**

- Frequency range: 4.0~5.0GHz
- Linear gain:31dB@4.5GHz
- Psat: 39dBm
- power supply: 9V/-0.7V or 8V/-0.7V
- 50ohm input/output
- Chip size: 3.7mm×3.8mm×0.1mm

Block Diagram



Product Introduction

GPA4-5-39 is a power amplifier chip manufactured using GaAs pHEMT technology. The working frequency band covers 4.0~5.0GHz. Under a bias voltage of 9V, the linear gain of the chip is 31dB, the saturated output power is 39dBm, and the saturated power gain is 28dB. The chip is grounded through backside through holes and mainly used in communication systems, transceiver components, radar, and other fields.

DC electrical specifications (TA=+25 °C)

Parameter	Min	Typ	Max	Unit
Drain working voltage		9	10	V
Gate bias voltage	-0.8	-0.7	-0.6	V
Quiescent drain current		2.5		A
Dynamic drain current	2.47	2.5	2.75	A

Microwave electrical specifications (TA=+25 °C, Vd=+8V)

Parameter	Min	Typ	Max	Unit
Frequency range		4.0~5.0		GHz
Linear gain		31		dB
Gain flatness		±0.15		dB
Saturated power gain		28		dB
Psat		39		dBm
PAE		37.5		%
Input return loss		-10	-8	dB
Output return loss		-15	-12	dB

Absolute maximum ratings^[1]

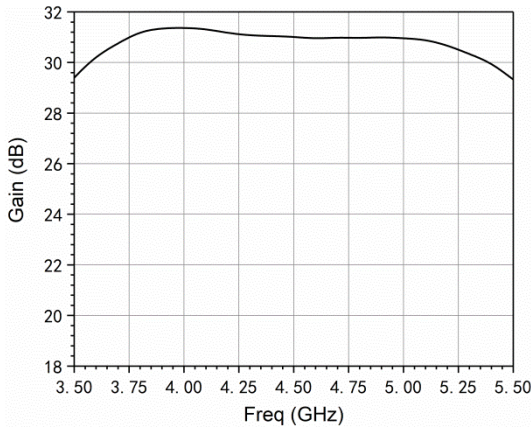
Parameter	Ratings
Drain voltage	+10V
Input power	+15dBm
Operating temperature	-55°C~+85°C
Storage temperature	-65°C~+120°C

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

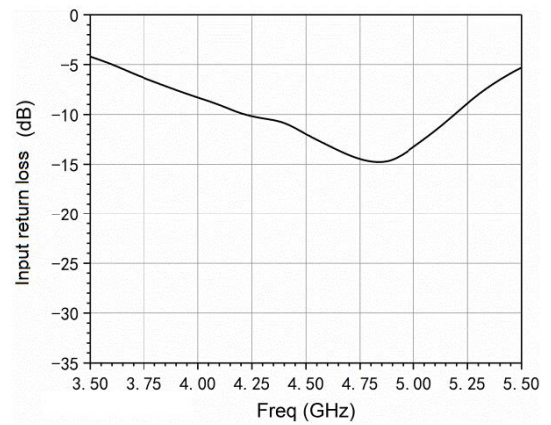
GaAs MMIC Power Amplifier Chip, 4-5 GHz

Typical performance curves (Vd: +8V)

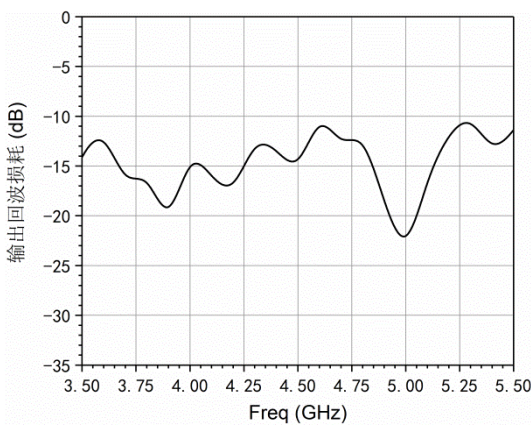
Gain VS. Frequency



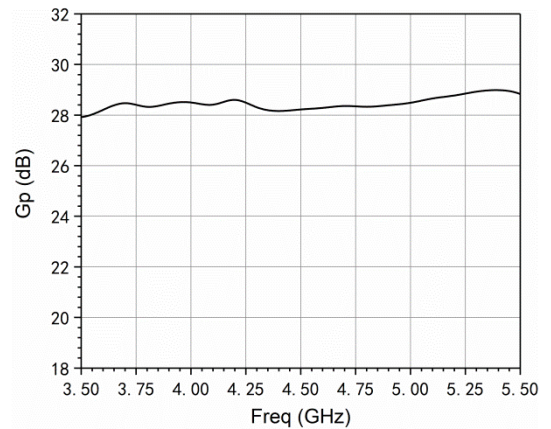
Input return loss VS. Frequency



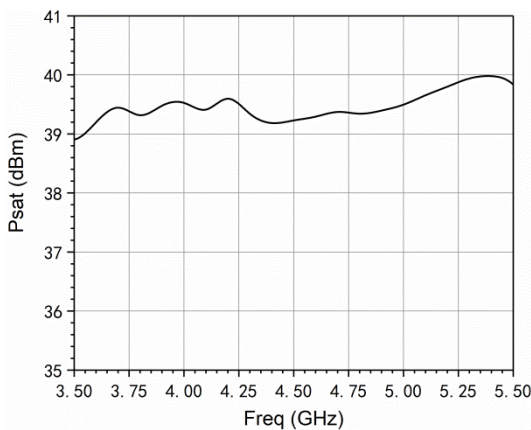
Output return loss VS. Frequency



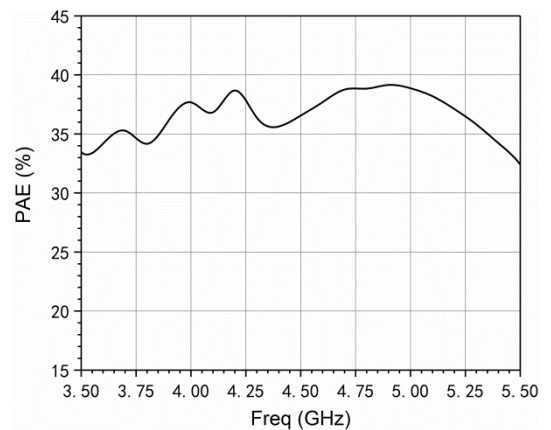
Power gain VS. Frequency (@Psat)



Psat VS. Frequency

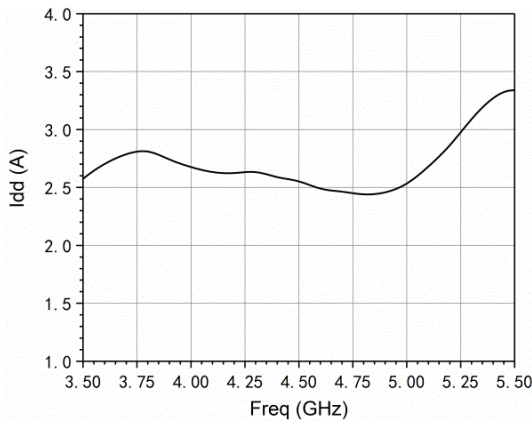


PAE VS. Frequency

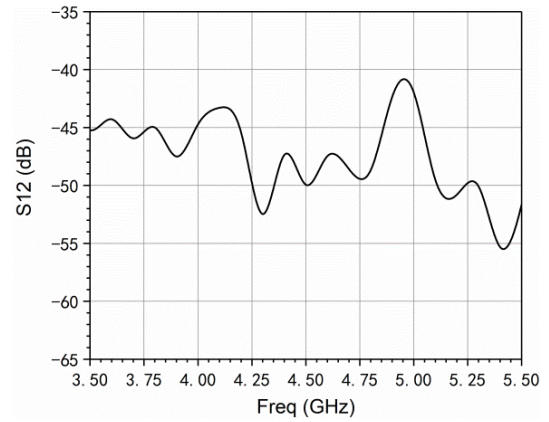


GaAs MMIC Power Amplifier Chip, 4-5 GHz

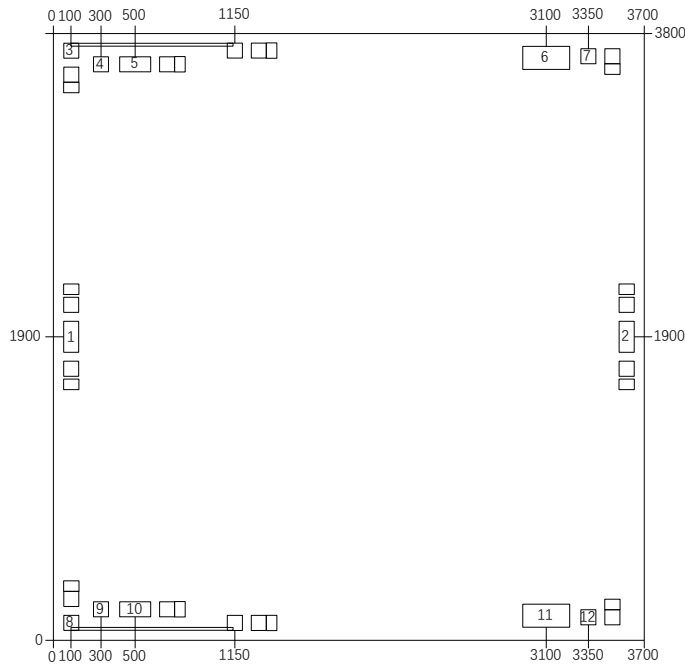
I_{dd} vs. Frequency (@P_{sat})



Reverse isolation degree vs. Frequency



Outline Dimensions



Notes:

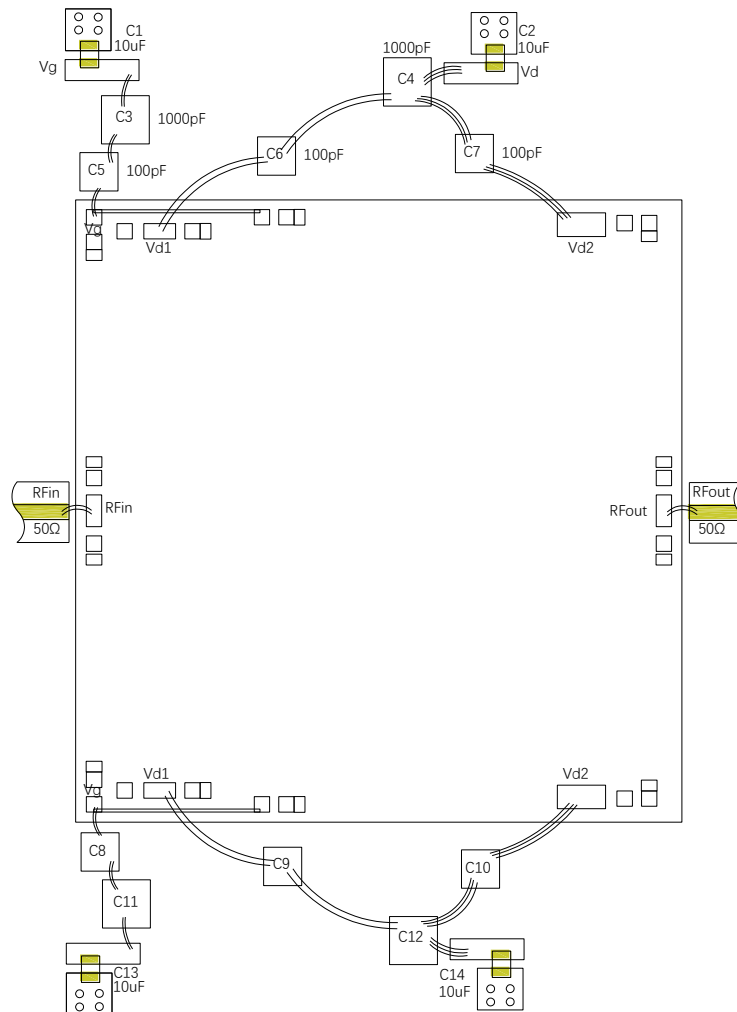
1. Unit: μm
2. Gold plating on bonding pads
3. Dimensional tolerance: ± 20 μm

Pad Definition

Pad Number	Function	Description	Dimensions
1	IN	RF input, external 50 ohm system, no need for external blocking capacitor	100 × 200μm
2	OUT	RF output, external 50 ohm system, no need for external blocking capacitor	100 × 200μm
3、8	VG	Gate supply, recommended bias voltage -0.7V	100 × 100μm
4、9	VD1_Test	First drain test supply terminal, not connected during assembly	100 × 100μm
5、10	VD1	Drain 1 power supply, recommended supply voltage 8V or 9V	200 × 100μm
6、11	VD2	Drain 2 power supply, recommended supply voltage 8V or 9V	200 × 150μm
7、12	VD2_Test	Drain 2 test power supply, not connected during assembly	100 × 100μm

GaAs MMIC Power Amplifier Chip, 4-5 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.

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



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