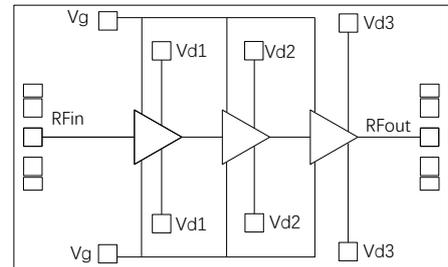


GaN MMIC Power Amplifier Chip, 8.0-12.0 GHz

Performance characteristics

- Frequency range: 8~12GHz
- Psat: 48dBm (pulse) /46dBm (continuous wave)
- Power gain: 22dB (pulse) /18dB (continuous wave)
- Power supply: 28V/-2.7V
- 50ohm input/output
- Chip size: 4.05mm×5.00mm×0.1mm

Block Diagram



Product Introduction

GX3038 is a power amplifier chip manufactured using GaN HEMT technology. The working frequency band covers 8.0-12.0GHz and can operate in both pulse and continuous wave modes. Under a 28V pulse supply voltage, it can provide a power gain of 22dB and a saturated output power greater than 48dBm. Under a continuous wave supply voltage of 28V, it can provide a power gain of 18dB and a saturated output power greater than 46dBm. The chip is grounded through the back through-hole. Mainly used in high-power transceiver components and other fields.

DC electrical parameters (T_A=+25°C)

Parameter	Min	Typ	Max	Unit
Gate bias voltage		-2.7		V
Drain working voltage		28		V
Quiescent drain current		2.8		A
Dynamic drain current		6.5		A

Microwave electrical parameters (T_A=+25°C, V_d=+28V, V_g=-2.7V, 10% duty cycle, cycle 1ms)

Parameter	Min	Typ	Max	Unit
Frequency range		8.0~12.0		GHz
Psat		48		dBm
PAE		40		%
Power gain (@P _{in} =26dBm)		22		dB
Power gain flatness		±0.4		dB
Input/output return loss		-11		dB

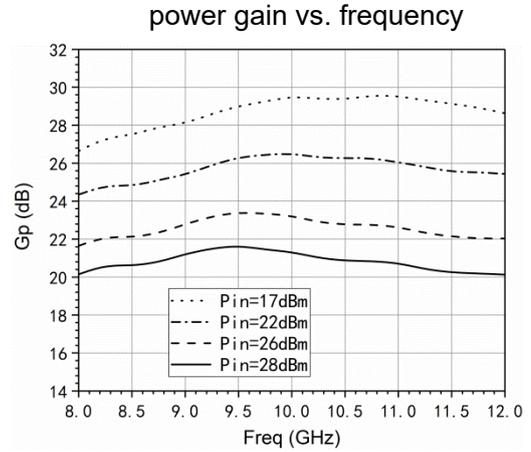
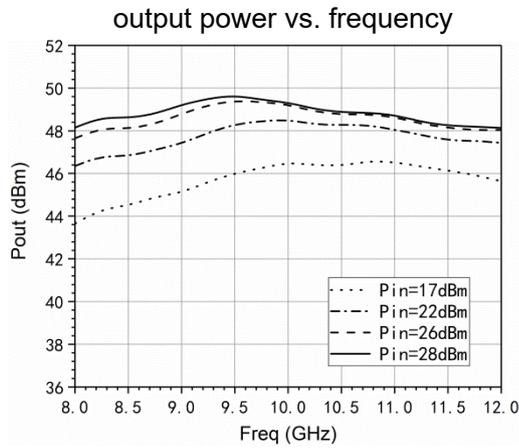
Absolute maximum ratings^[1]

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

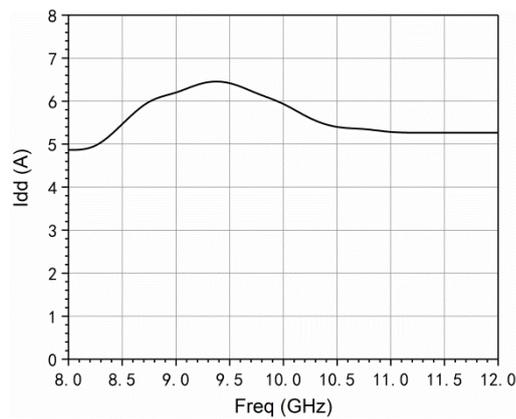
[1] Exceeding any of these limits may cause permanent damage.

GaN MMIC Power Amplifier Chip, 8.0-12.0 GHz

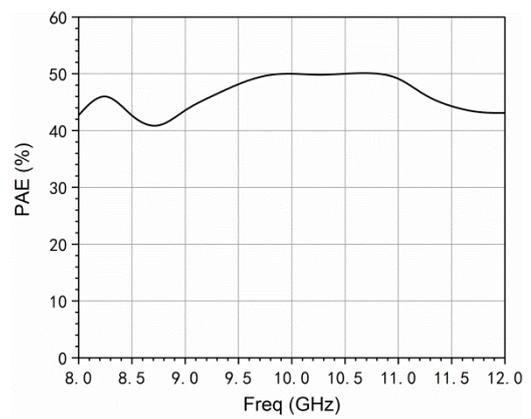
Typical performance curves ($T_A=+25^{\circ}\text{C}$, $V_d=+28\text{V}$, $V_g=-2.7\text{V}$, 10% duty cycle, cycle 1ms)



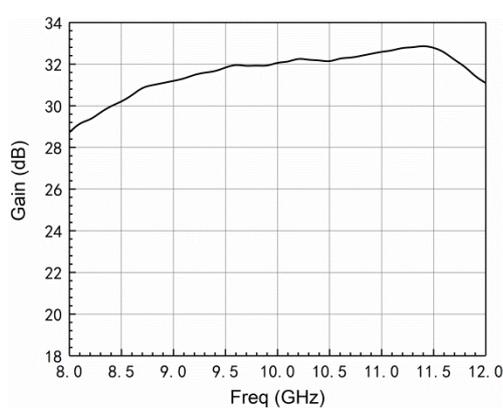
Dynamic current vs. frequency (@P_{in}=26dBm)



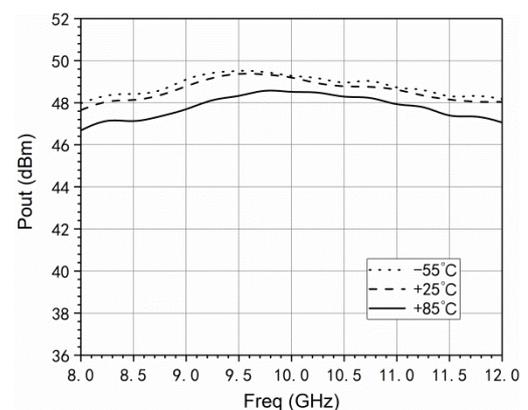
Power added efficiency vs. frequency (@ P_{in}=26dBm)



Small signal gain vs. frequency (@P_{in}=0dBm)



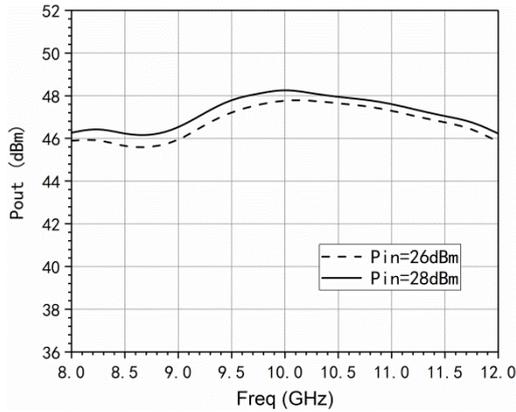
Three temperature output power vs. frequency



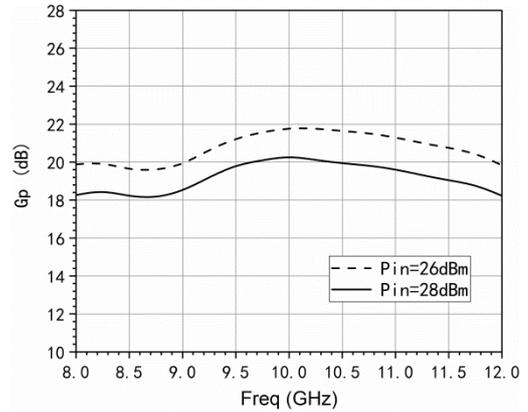
GaAs MMIC Power Amplifier Chip, 8.0-12.0 GHz

Typical performance curves ($T_A=+25^\circ\text{C}$, $V_d=+28\text{V}$, $V_g=-2.7\text{V}$, continuous wave)

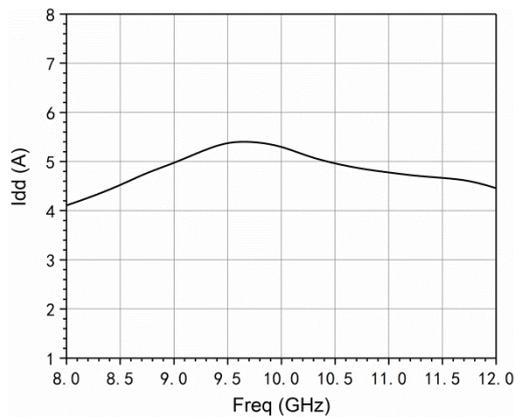
Output Gain VS. frequency



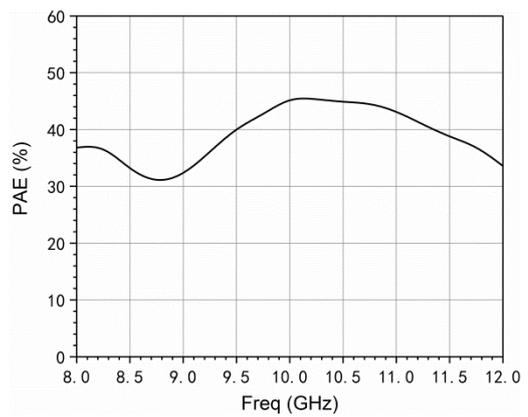
Gain vs. frequency



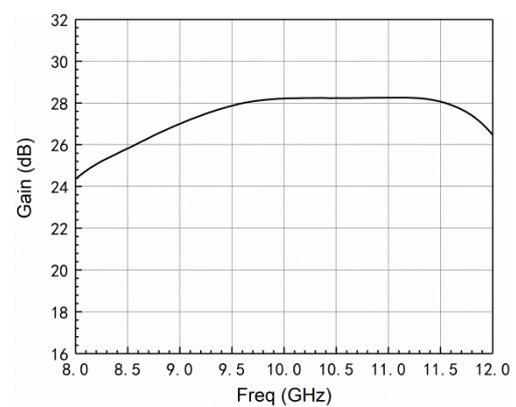
Dynamic current vs. frequency (@Pin=28dBm)



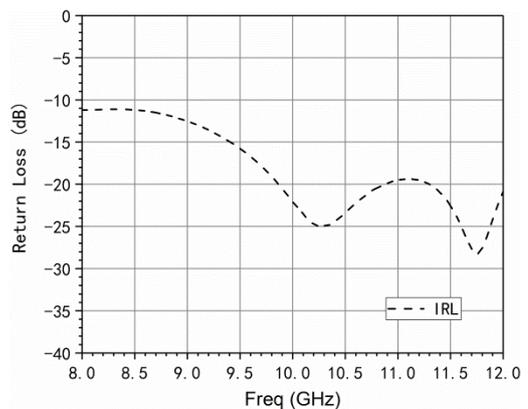
Power added efficiency vs. frequency (@ Pin=28dBm)



Small signal gain vs. frequency (@Pin=-10dBm)

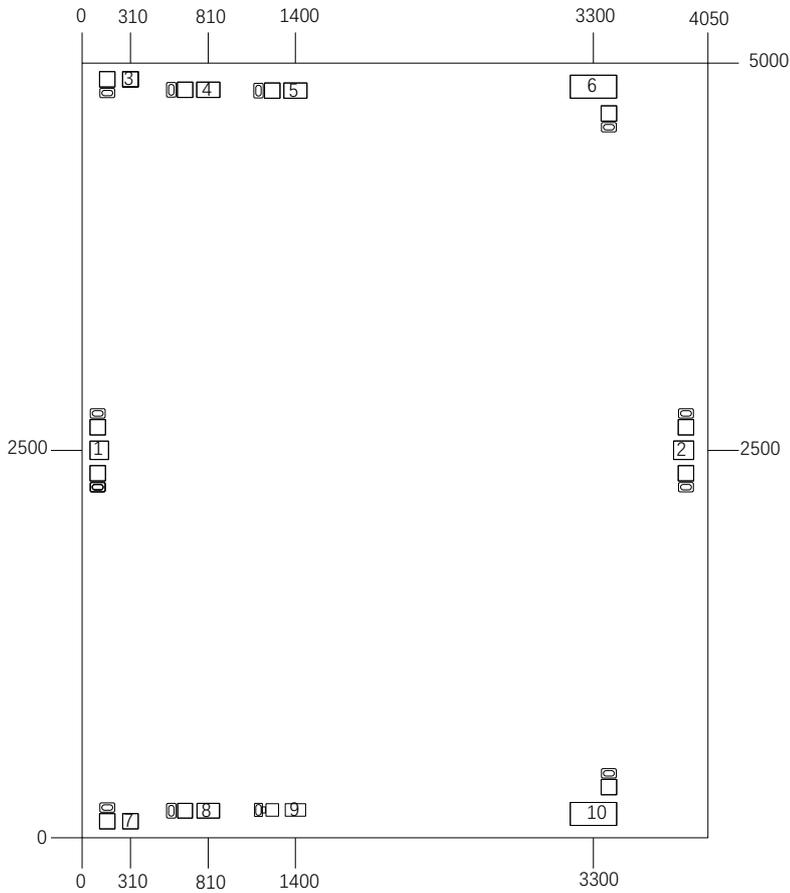


Input return loss vs. frequency



GaN MMIC Power Amplifier Chip, 8.0-12.0 GHz

Outline Dimensions



Notes:

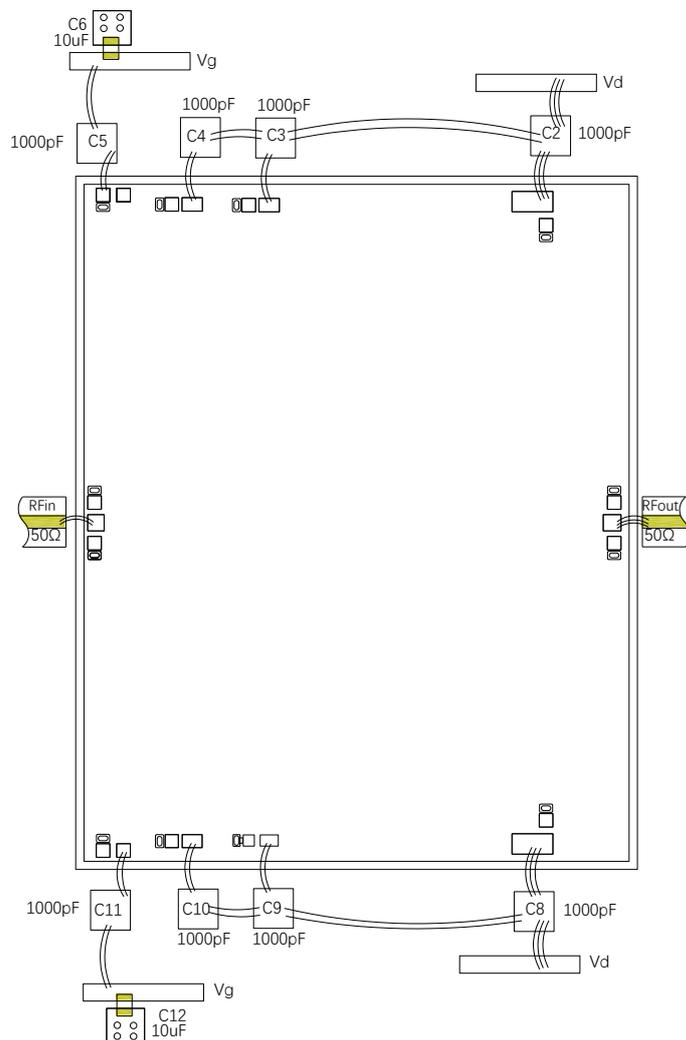
1. Unit: μm
2. Gold plating on bonding pads
3. Dimensional tolerance: $\pm 20 \mu\text{m}$

Pad Definition

Pad Number	Function	Description	Dimensions
1	IN	RF input , external 50 ohm system, no need for external blocking capacitor	100 × 120 μm
2	OUT	RF output , external 50 ohm system, no need for external blocking capacitor	100 × 120 μm
4、5、8、9	Vd	Drain power supply	150 × 100 μm
6、10	Vd	Drain power supply	300 × 150 μm
3、7	Vg	Gate power supply	100 × 100 μm

GaN MMIC Power Amplifier Chip, 8.0-12.0 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. 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

