# GPA-3242A

## GaAs MMIC Power Amplifier Chip, 32-42GHz

### Performance characteristics

Frequency range: 32-42GHz
Small Signal Gain: 22dB
P-1dB: 24.5dBm
Psat: 25dBm
Power supply: +5V@210mA
50Ohm input/output
100% on-chip testing
Chip size: 2.12 x 1.1 x 0.1mm

### Product Introduction

GPA-3242A is a broadband amplifier chip based on GaAs technology, covering a frequency range of 32-44GHz, with a small signal gain of 22dB and a Psat output power of 25.5dBm. The chip supports +6V operation. The chip via metallization process ensures good grounding, and the back side is metallized, which is suitable for eutectic sintering process.

| Use restriction parameter [1] | |
|---|---|
| Maximum drain voltage | +7 V |
| Maximum input power | +20 dBm |
| Operating temperature | -55 ~ +85°C |
| Storage temperature | -65 ~ +150°C |

【1】 Exceeding any of these maximum limits may cause permanent damage.

| Electrical parameters (Ta=+25°C, Vd = +5 V , Ids= 210 mA) | | | | |
|---|---|---|---|---|
| index | Minimum | Typical Value | Maximum | unit |
| Frequency Range | | 32-42 | | GHz |
| Small Signal Gain | - | 22 | - | dB |
| Gain Flatness | | ± 2.5 | | dB |
| P-1dB | - | 24.5 | - | dBm |
| Psat | - | 25 | - | dBm |
| Input return loss | - | 13 | - | dB |
| Output return loss | - | 7 | - | dB |
| *By tuning the Vg terminal voltage from -2V to 0V, the recommended Vg terminal voltage is -0.75V . | | | | |

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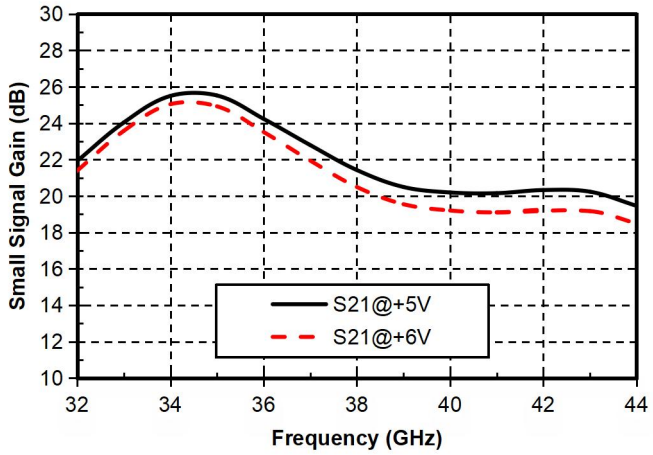
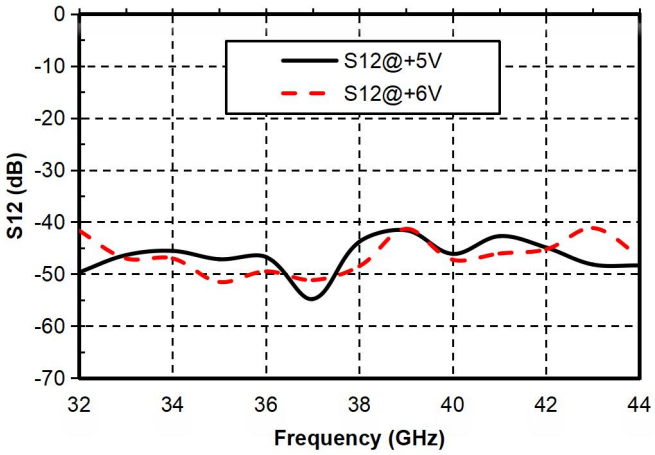
## GaAs MMIC Power Amplifier Chip, 32-42GHz

### Main index test curve

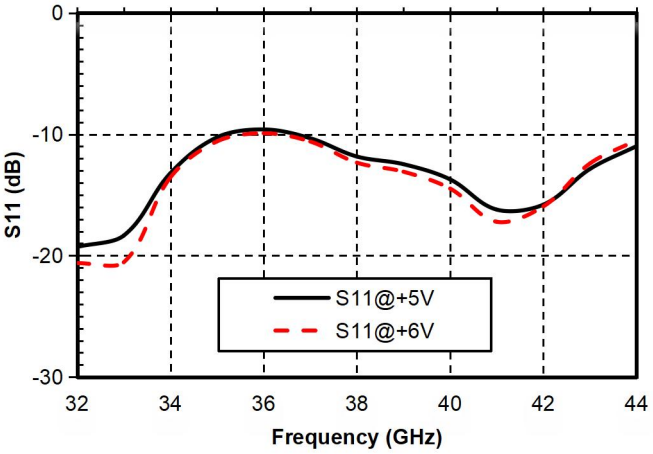
Gain vs. Frequency



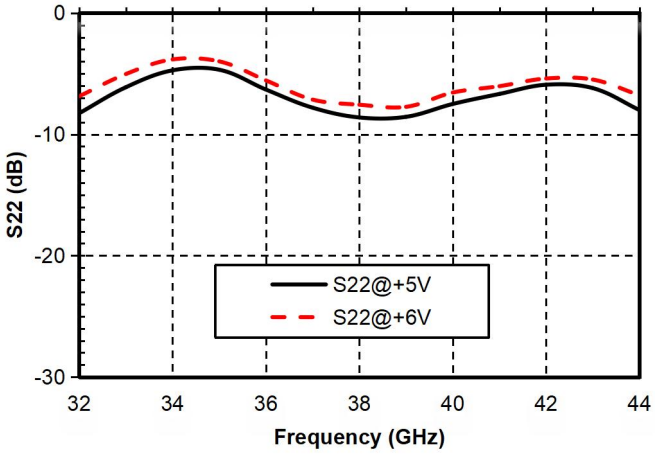

Reverse Isolation vs. Frequency



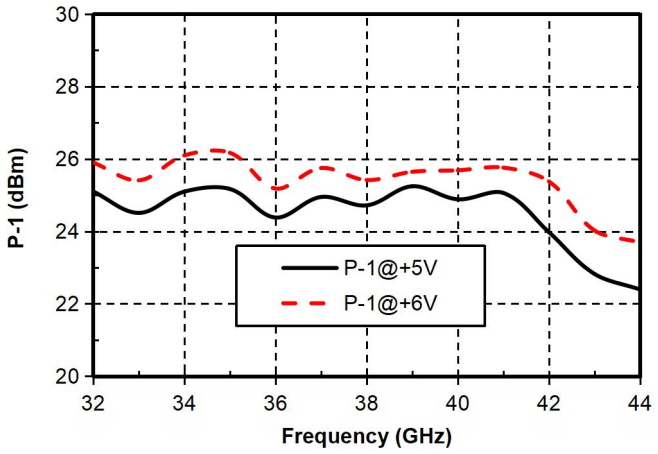

Input Return Loss vs. Frequency



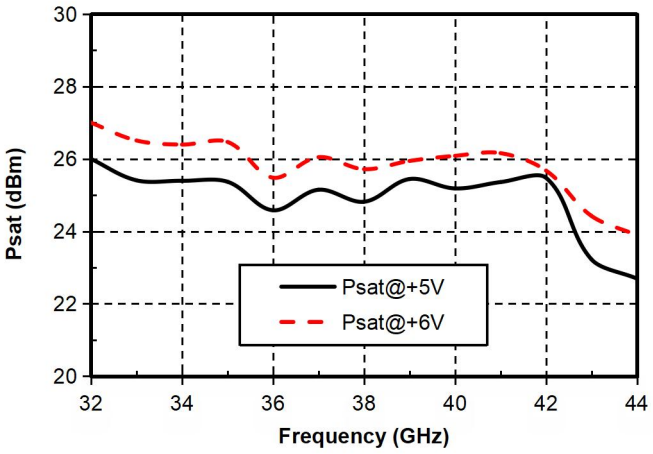

Output Return Loss vs. Frequency




P -1 vs. Frequency




P sat vs. frequency

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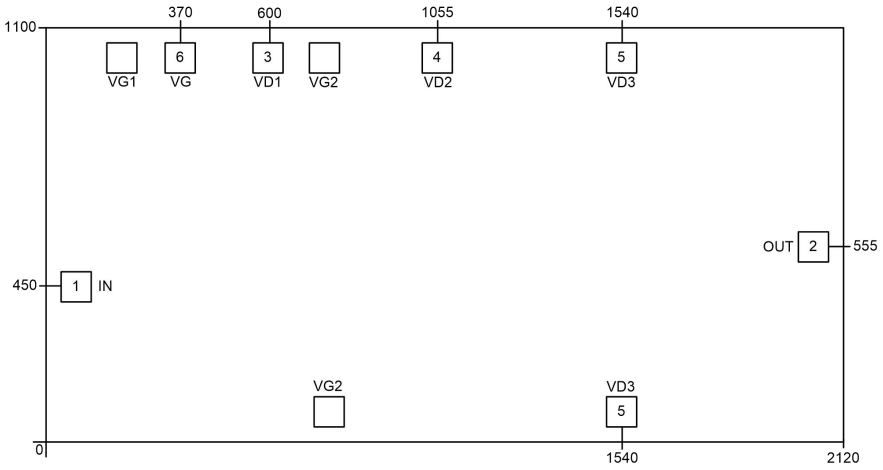
## GaAs MMIC Power Amplifier Chip, 32-42GHz

### Appearance structure [2]

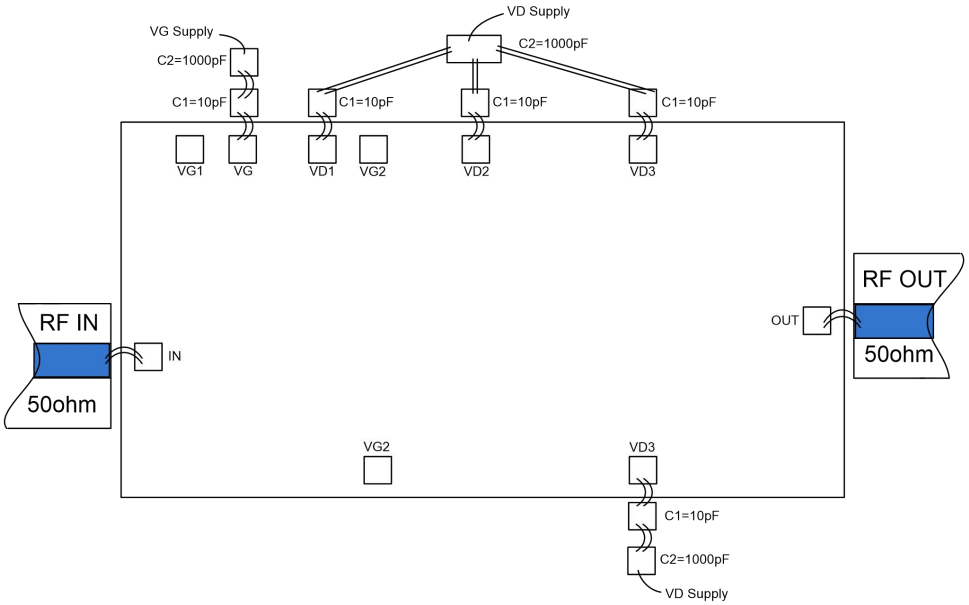



【 2 】The units in the figure are all micrometers ( dimensional tolerance: ±100um.)

| Bonding point definition | | |
|---|---|---|
| Bonding point number | Function Symbol | Functional Description |
| 1 | RF IN | The signal input terminal is connected to a 50 ohm circuit, and no DC blocking capacitor is required |
| 2 | RF OUT | The signal output terminal is connected to a 50 ohm circuit, and no DC blocking capacitor is required |
| 3~5 | VD1 , VD2, VD3 | Amplifier drain bias, external 10 pF, 1000pF bypass capacitor required |
| 6 | VG1 | Amplifier gate bias, external 10 pF, 1000pF bypass capacitor required |
| Chip bottom | GND | The bottom of the chip needs to be in good contact with the RF and DC grounds |

## GaAs MMIC Power Amplifier Chip, 32-42 GHz

### Recommended assembly diagram




### Notice

- The chip must be stored in an anti-static container and kept in a nitrogen environment.
- Do not attempt to clean the bare die surface using wet chemical methods.
- Please strictly follow the ESD protection requirements to avoid static damage to the bare chip.
- General operation: Please use precision pointed tweezers to pick up bare chips. Avoid touching the chip surface with tools or fingers during operation.
- Rack mounting operation suggestions: AuSn solder eutectic sintering process can be used for bare chip mounting. The mounting surface must be clean and flat.
- Sintering process: It is recommended to use AuSn solder sheets with a gold-tin ratio of 80/20. The working surface temperature reaches 255 ˚C and the tool (vacuum chuck) temperature reaches 265 ˚C . When the high-temperature mixed gas (nitrogen-hydrogen ratio of 90/10) is blown to the chip, the temperature at the top of the tool should be raised to 290 ˚C . Do not let the chip exceed 320 ˚C for more than 20 seconds. The friction time should not exceed 3 seconds.
- Bonding operation suggestions: Use Φ0.025mm (1mil) gold wire for both ball and wedge bonding. Thermosonic bonding temperature is 150 ˚C . The pressure of the wedge bonding knife is 40~50gf for ball bonding and 18~22gf for wedge bonding. Use the smallest possible ultrasonic energy. The bonding starts at the pressure point on the chip and ends at the package (or substrate).