# GPA-0012B

## GaAs MMIC Power Amplifier Chip，DC-12GHz

### Performance characteristics

Frequency range: DC-12GHz
Small Signal Gain: 14 dB
P-1dB: 30.5 dBm
Psat: 31.5 dBm
Power supply: +12V@350mA
50Ohm input/output
100% on-chip testing
Chip size: 2.04 x 1.78 x 0.1mm

### Product Introduction

GPA -0012B is a broadband amplifier chip based on GaAs technology, with a frequency range of DC-12GHz, a small signal gain of 14dB, and a Psat output power of 31.5dBm . The chip via metallization process ensures good grounding, and the back side is metallized for eutectic sintering process.

| Use restriction parameter [1] | |
|---|---|
| Maximum drain voltage | +15 V |
| Maximum input power | +25 dBm |
| Operating temperature | -55 ~ +85°C |
| Storage temperature | -65 ~ +150°C |

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

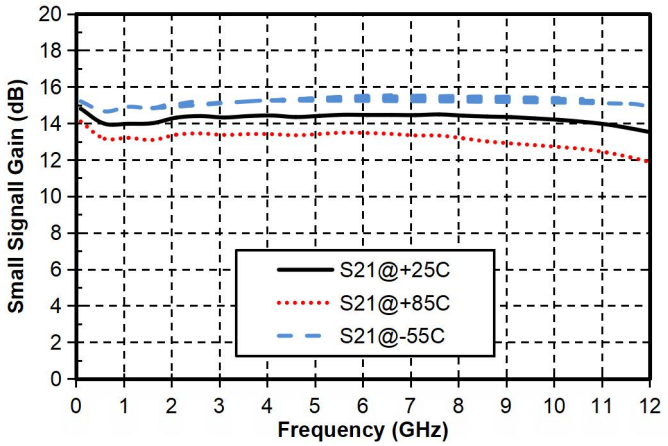
| Electrical parameters (Ta=+25°C, Vd = +12 V , Ids= 350 mA) | | | | |
|---|---|---|---|---|
| Index | Minimum | Typical Value | Maximum | Unit |
| Frequency Range | | DC-12 | | GHz |
| Small Signal Gain | - | 14 | - | dB |
| Gain Flatness | | ± 0.7 | | dB |
| P-1dB | - | 30.5 | - | dBm |
| Psat | - | 31.5 | - | dBm |
| Noise Figure | - | 3.5 | - | dB |
| OIP3 with 20dBm output | - | 40 | - | dBm |
| IMD3 with 20dBm output | - | -40 | - | dBc |
| Input return loss | - | 16 | - | dB |
| Output return loss | - | 21 | - | dB |
| *By tuning the Vg terminal voltage from -2V to 0V, the recommended Vg terminal voltage is -0.85V . | | | | |

Add: 101 cecil street #14-10, tong eng building singapore 069533
Email: info@standardcircuit.com
Web: www.standardcircuit.com
Tel: +65 82613258

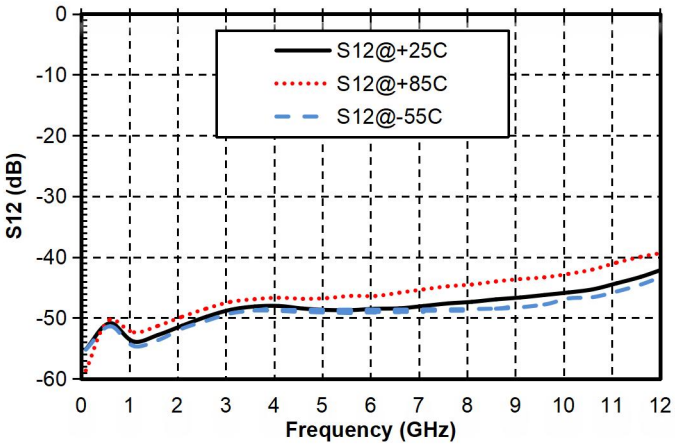
## GaAs MMIC Power Amplifier Chip, DC-12GHz

### Main index test curve

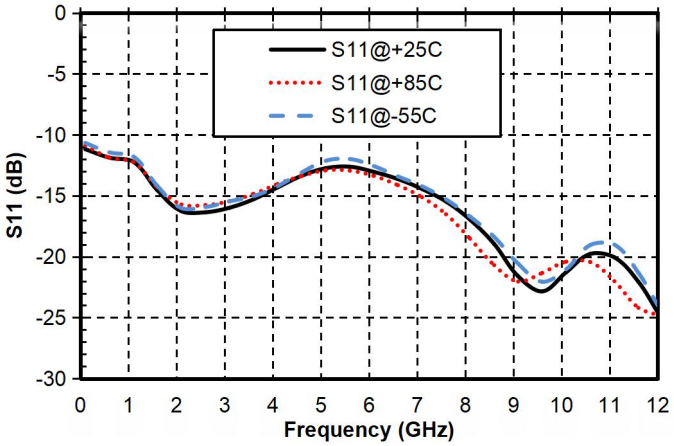
Gain vs. Frequency



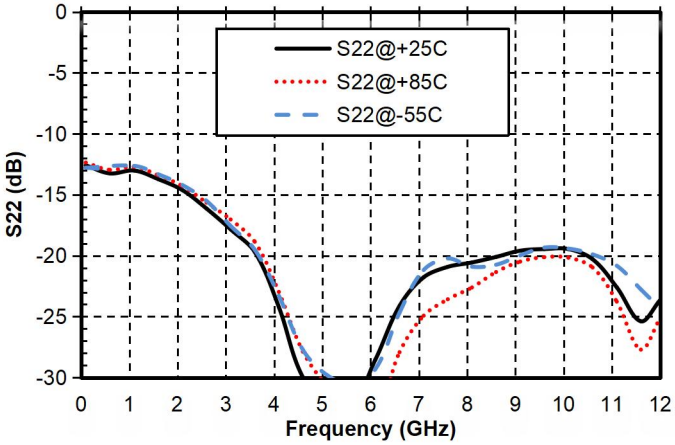

Reverse Isolation vs. Frequency



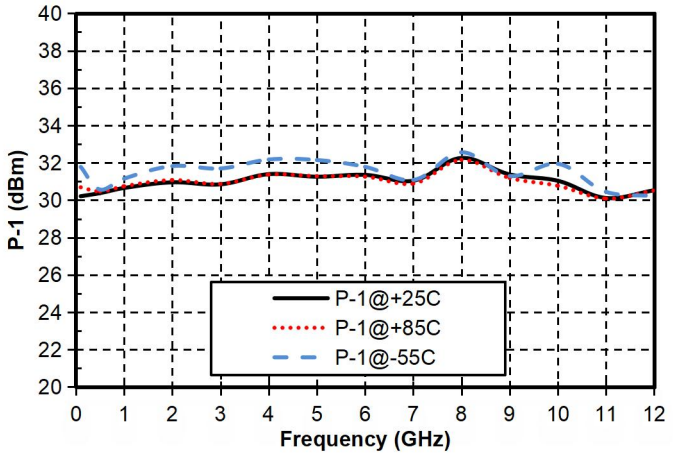

Input Return Loss vs. Frequency



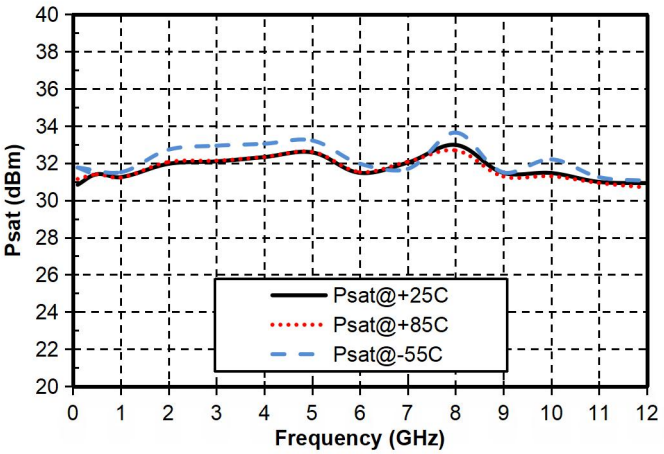

Output Return Loss vs. Frequency




P -1 vs. Frequency




P sat vs. frequency

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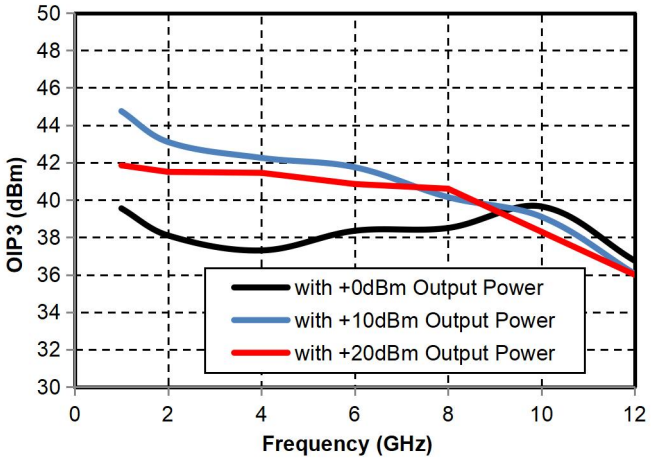
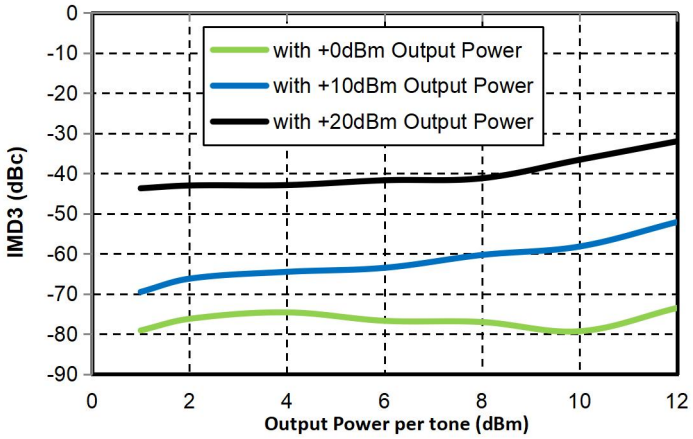
## GaAs MMIC Power Amplifier Chip, DC-12GHz

### Main index test curve

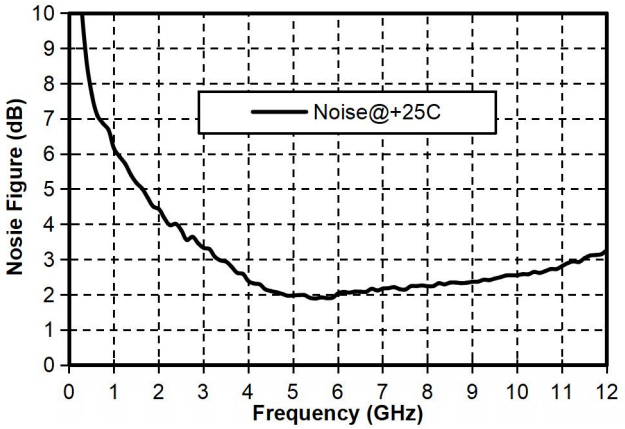
OIP3 vs. Frequency



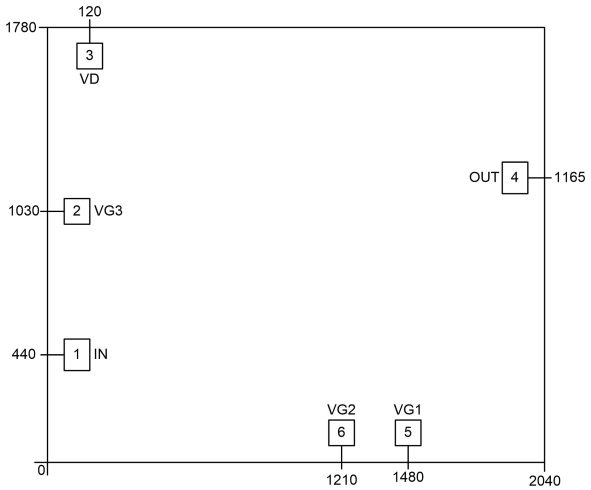

IMD3 vs. Frequency




Noise Figure vs. Frequency




### Appearance structure [2]

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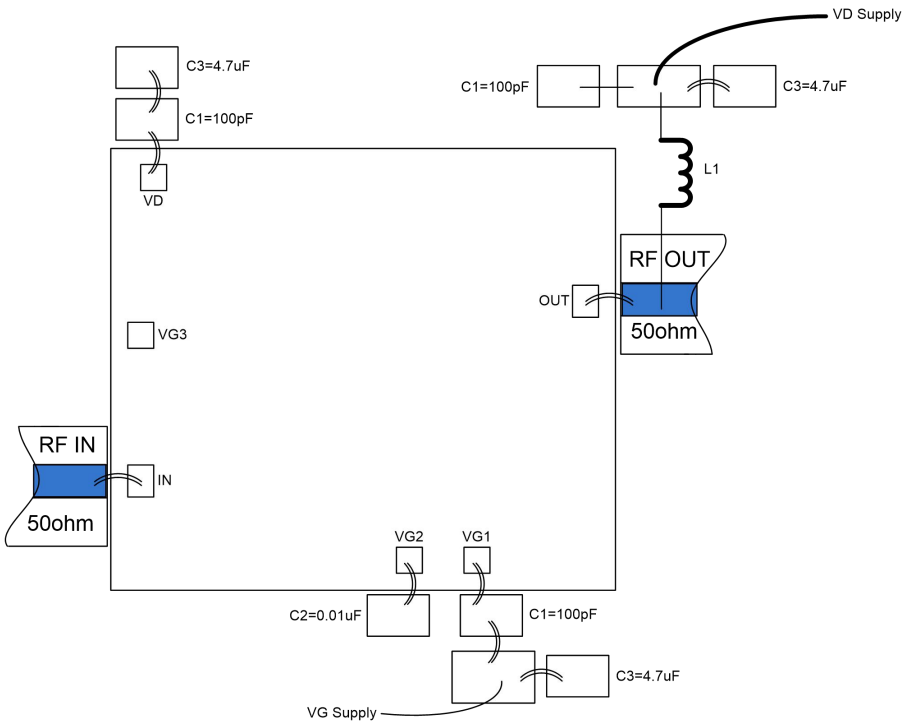
## GaAs MMIC Power Amplifier Chip, DC-12 GHz

| 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 a DC blocking capacitor needs to be added |
| 4 | RF OUT 、VD | The signal output terminal is connected to a 50 ohm circuit, and a DC blocking capacitor needs to be added. An external DC bias network is connected to provide drain current. Please refer to the following application circuit or contact the manufacturer* |
| 5 | VG1 | Amplifier gate bias , external 100pF , 4.7uF bypass capacitors are required |
| 6 | VG2 | Amplifier gate bias , external 0.01uF bypass capacitor is required to ground |
| 3 | VD | Need to connect external 100pF , 4.7uF bypass capacitor to ground |
| Chip bottom | GND | needs to be in good contact with the RF and DC grounds |

## Recommended assembly diagram




【 2 】The units in the figure are all micrometers , and the dimensional tolerance is ± 50um .