

## GaAs MMIC Power Amplifier Chip, 18-50GHz

### Performance characteristics

Frequency range: 18 - 50 GHz

Small signal gain: 19dB

Noise figure: 7.0dB

P-1dB: 18.5 dBm

Psat: 19.5 dBm

Power supply: +5V@230mA

50Ohm input/output

100% on-chip testing

Chip size: 2.08 x 1.27 x 0.1mm

### Product Introduction

GPA-1850E is a broadband amplifier chip based on GaAs technology, covering a frequency range of 18~50GHz, with a small signal gain of 19dB and a P-1 output power of 18.5dBm. The chip via metallization process ensures good grounding, and the back side is metallized for eutectic sintering process.

#### Use restriction parameter <sup>1</sup>

|                       |              |
|-----------------------|--------------|
| 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.

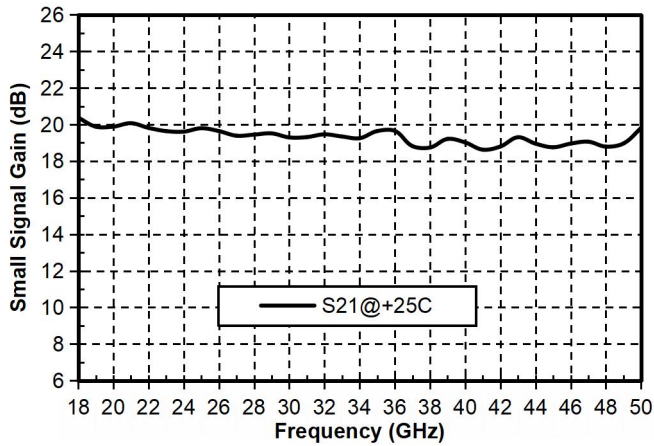
#### Electrical parameters (Ta=+25°C, Vd = +5 V , Ids= 230 mA)

| Index              | Minimum | Typical Value | Maximum | Unit |
|--------------------|---------|---------------|---------|------|
| Frequency Range    | 18-50   |               |         | GHz  |
| Small Signal Gain  | -       | 19            | -       | dB   |
| Gain Flatness      | ± 0.85  |               |         | dB   |
| Noise Figure       |         | 7.0           |         | dB   |
| P-1dB              | -       | 18.5          | -       | dBm  |
| Psat               | -       | 19.5          | -       | dBm  |
| Input return loss  | -       | 15            | -       | dB   |
| Output return loss | -       | 13            | -       | dB   |

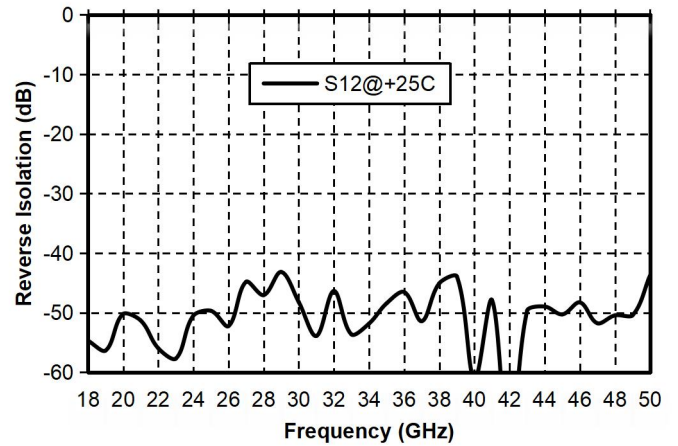
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Main index test curve

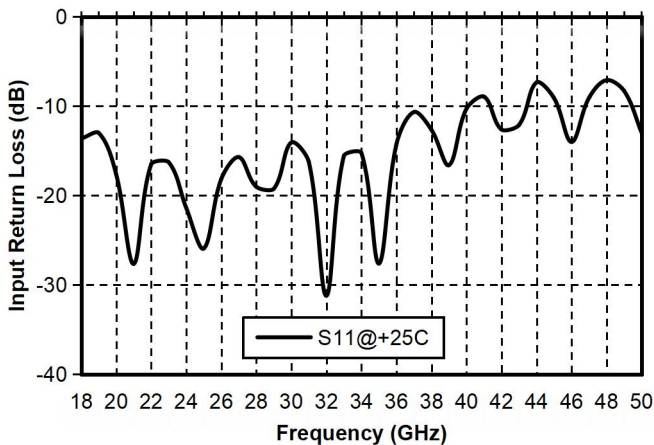
Gain vs. Frequency



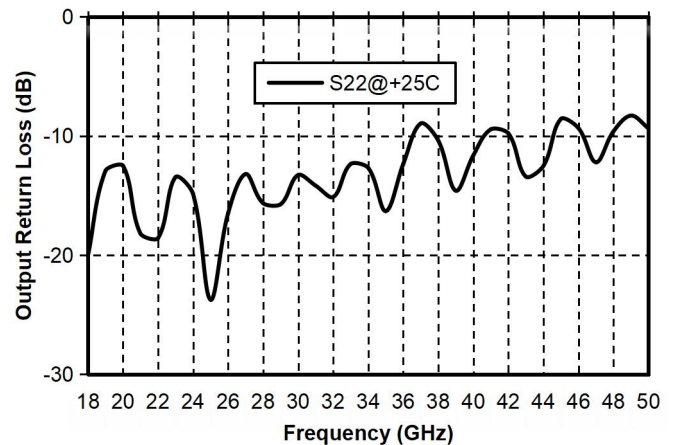
Reverse Isolation vs. Frequency



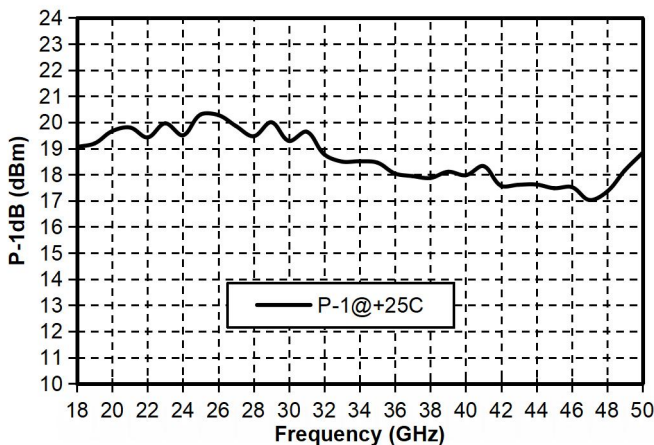
Input Return Loss vs. Frequency



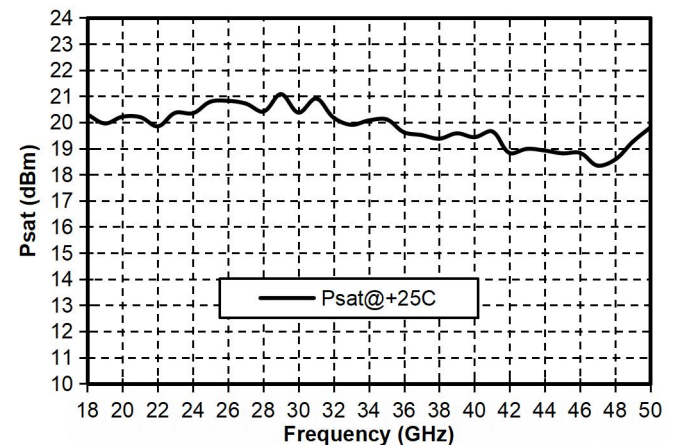
Output Return Loss vs. Frequency



P-1dB vs. Frequency

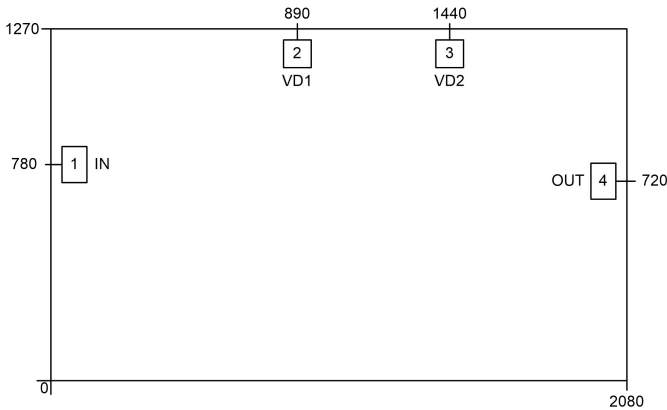


Psat vs. Frequency



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### Appearance structure <sup>2</sup>



【2】 The units in the figure are all micrometers (dimensional tolerance:  $\pm 100\mu\text{m}$ .)

### 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  |
| 4                    | RF OUT          | The signal output terminal is connected to a 50 ohm circuit, and no DC blocking capacitor is required |
| 2.3                  | VD1 , VD2       | Amplifier drain bias, requires external 100pF bypass capacitor  |
| Chip bottom          | GND             | The bottom of the chip needs to be in good contact with the RF and DC grounds                         |

### Recommended assembly drawing

