

GaAs MMIC Power Amplifier Chip, 9-20 GHz

Performance characteristics

- Frequency range: 9 - 20 GHz
- Small signal gain: 26.5dB
- Gain flatness: ± 2.1 dB
- P -1 dB : 27dBm
- Psat : 27.5dBm
- Power supply: +5 V /520mA
- 50Ohm input / output
- Chip size: QFN 5X5

Performance characteristics

- Frequency range: 9 - 20 GHz
- Small signal gain: 25dB
- Gain flatness: ± 2.0 dB
- P -1 dB : 28dBm
- Psat : 29dBm
- Power supply: +6 V /470mA
- 50Ohm input / output
- Chip size: QFN 5X5

Product Introduction

GPA-0920B-CQ5B is a broadband power amplifier based on GaAs technology , with a frequency range of 9GHz~20GHz. GPA-0920B-CQ5B supports +5V and +6V power supply. This chip adopts 5 x 5 mm ceramic surface mount package , and the surface of the pin pad is gold-plated, which is suitable for reflow soldering installation process.

Using the Limit Parameter

Maximum drain voltage	+8V
Maximum gate bias	-3V
Maximum input power	+20dBm
Operating temperature	-55 ~ + 125 °C
Storage temperature	-65 ~ +150°C

Exceeding any of these maximum limits may cause permanent damage.

Electrical performance parameters (TA = +25°C , Vd =+5V, Ids=520mA)

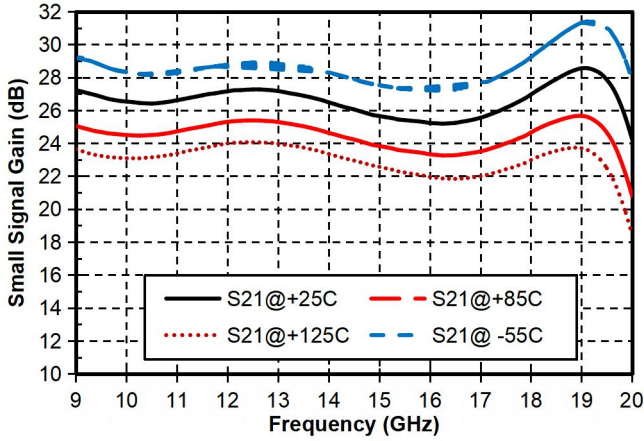
Index	Minimum	Typical Value	Maximum	Unit
Frequency Range	9-20			G Hz
Small Signal Gain	-	26.5	-	dB
Gain Flatness		± 2.1		dB
P -1dB	-	27	-	dBm
Psat	-	27.5	-	dBm
Input return loss	-	17	-	dB
Output return loss	-	16	-	dB
Quiescent Current		520		mA

* By tuning the Vg terminal voltage from -2V to 0V , the recommended Vg terminal voltage is -0.7V .

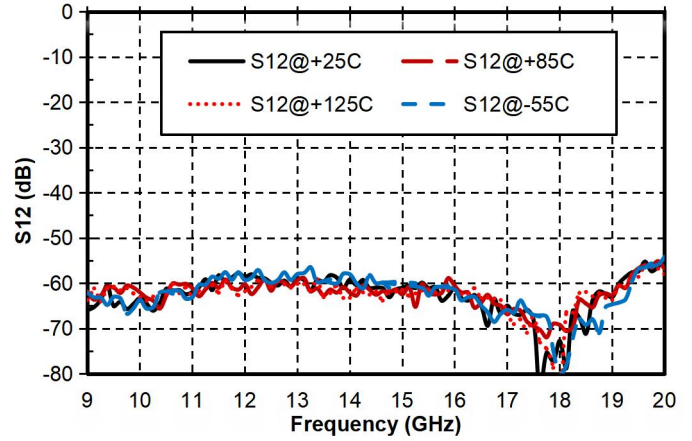
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Main index test curve @+5V

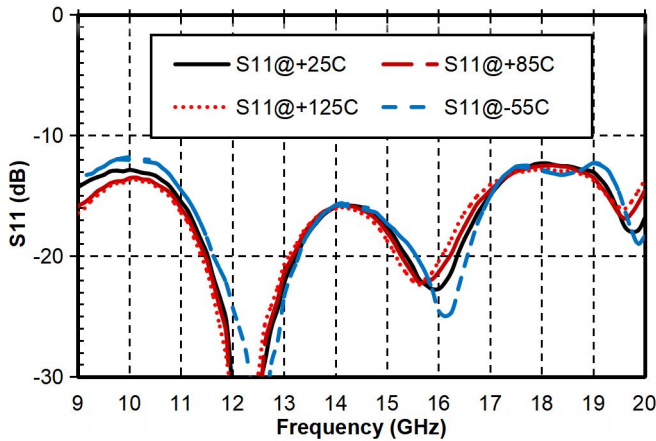
Gain vs. Frequency



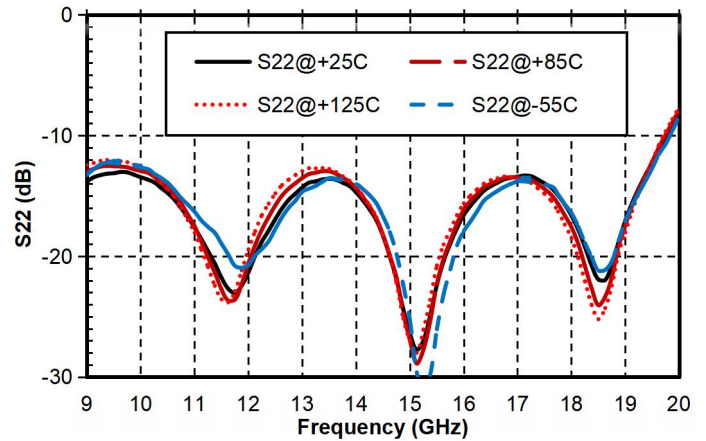
Reverse Isolation vs. Frequency



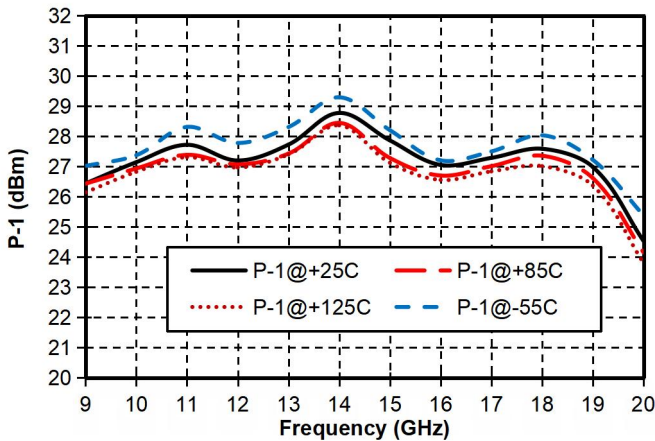
Input Return Loss vs. Frequency



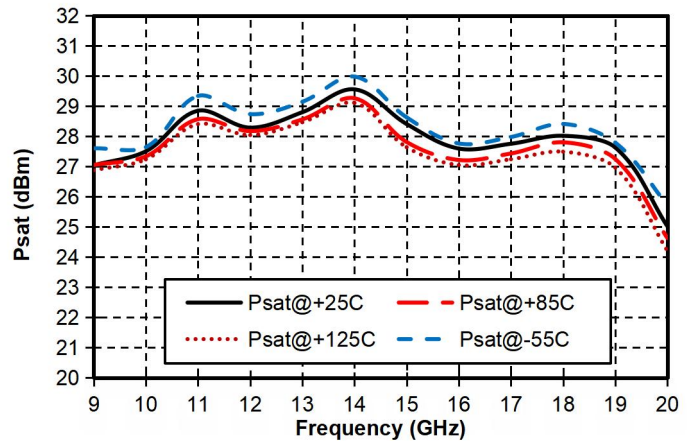
Output Return Loss vs. Frequency



P-1dB vs. Frequency



P sat vs. frequency



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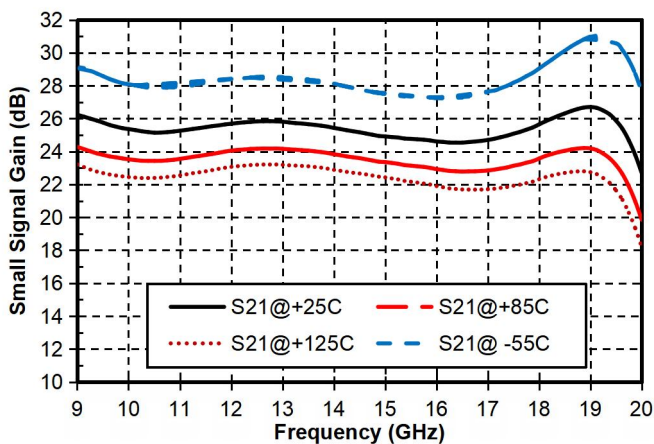
Electrical performance parameters (TA = +25°C , Vd =+6V, Ids=470mA)

Index	Minimum	Typical Value	Maximum	Unit
Frequency Range	9-20			G Hz
Small Signal Gain	-	25	-	dB
Gain Flatness		± 2		dB
P -1dB	-	28	-	dBm
Psat	-	29	-	dBm
Input return loss	-	17	-	dB
Output return loss	-	16	-	dB
Quiescent Current		470		mA

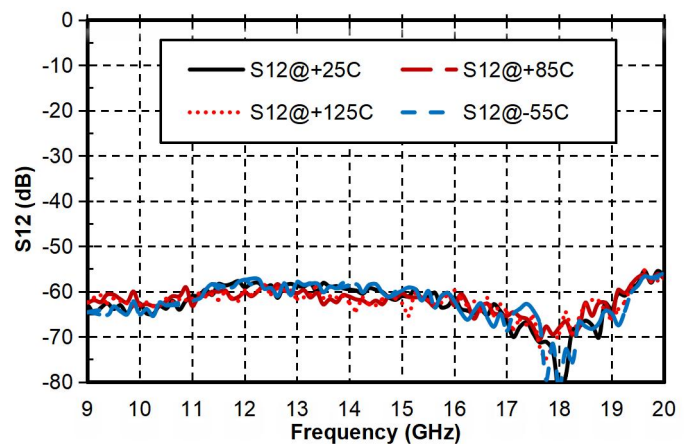
* By tuning the Vg terminal voltage from -2V to 0V , the recommended Vg terminal voltage is -0.75V .

Main index test curve @+6V

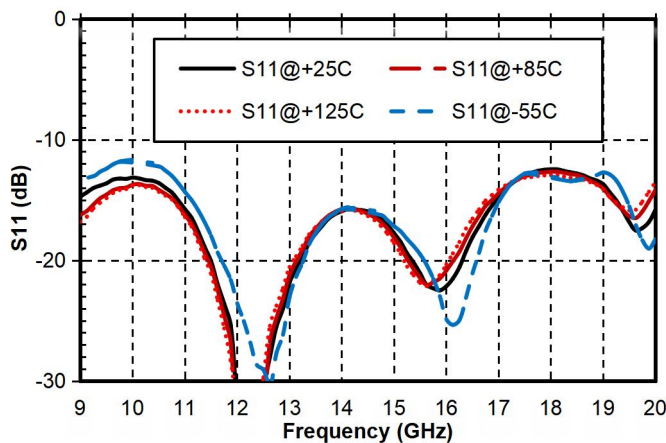
Gain vs. Frequency



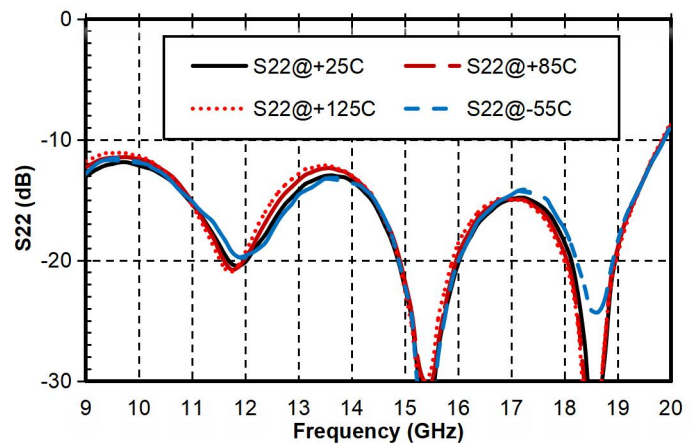
Reverse Isolation vs. Frequency



Input Return Loss vs. Frequency

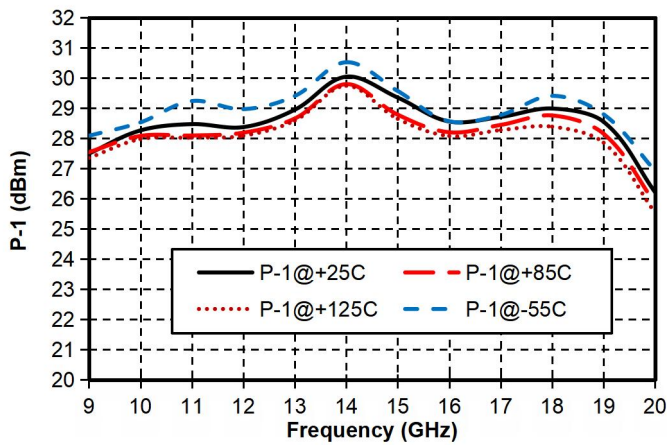


Output Return Loss vs. Frequency

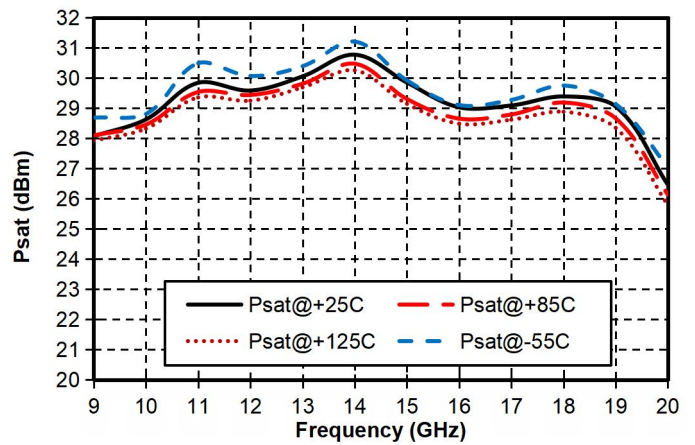


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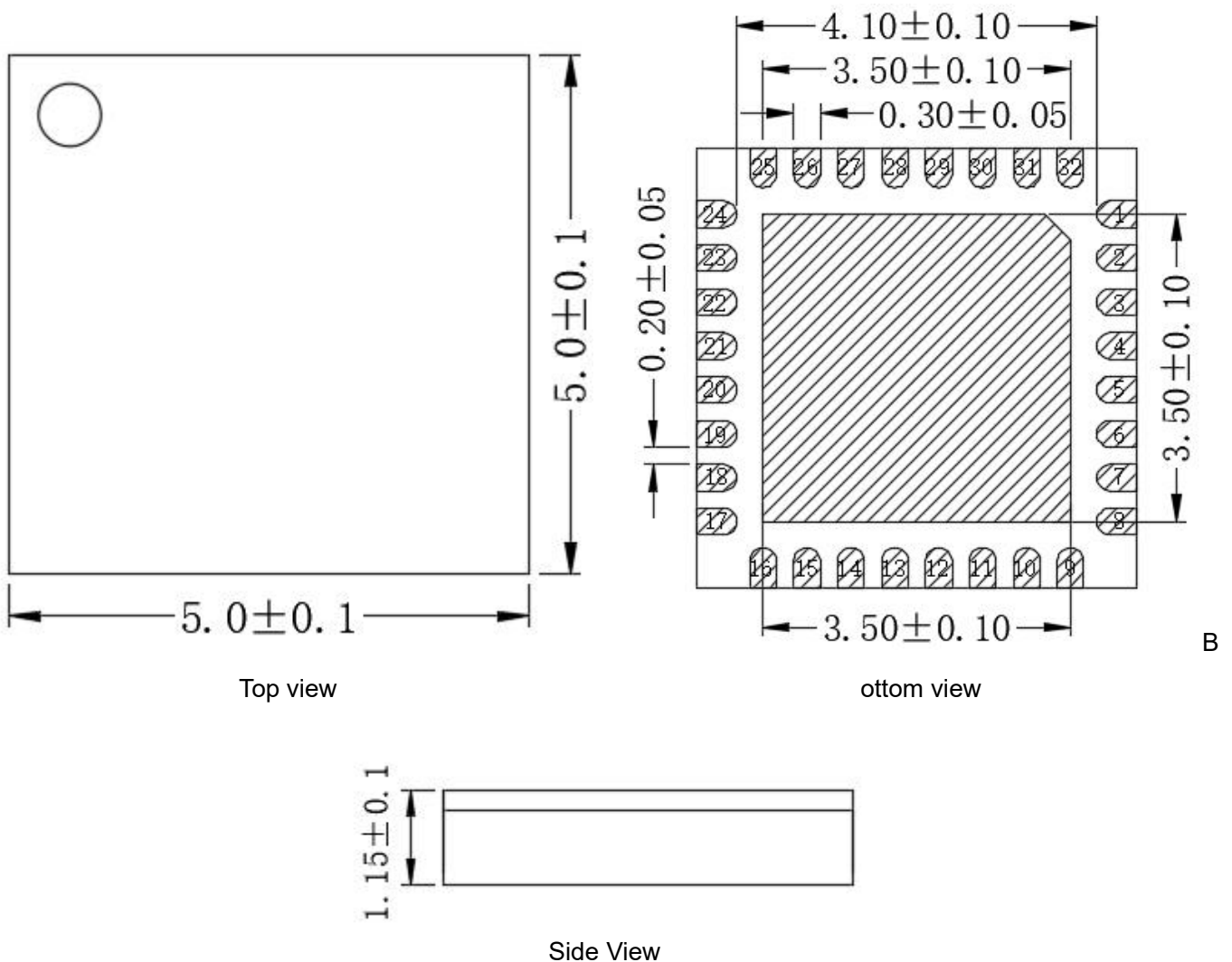
P-1dB vs. Frequency



P sat vs. frequency



Appearance structure

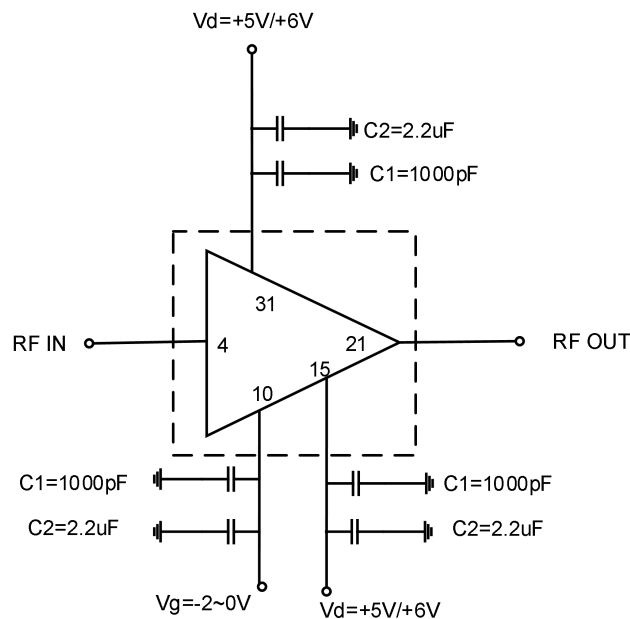


All units in the figures are millimeters .

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Pin Definition		
Pin number	Function Symbol	Functional Description
4	RFIN	The signal input terminal is connected to a 50 ohm circuit, and no DC blocking capacitor is required
21	RFOUT	The signal output terminal is connected to a 50 ohm circuit, and no DC blocking capacitor is required
10	VG	Amplifier Gate Bias
15, 31	VD	Amplifier Drain Bias
1-3, 5-9, 16-20, 22-25, 32	GND	The pins need to be well grounded to the RF and DC grounds
Chip bottom	GND	The bottom of the chip needs to be well grounded to RF and DC
Other	NC	No welding required, can be grounded

Recommended Circuit



Precautions for use

- Sealing material : Ceramic material that meets ROHS standards
- Lead surface plating: gold, gold layer thickness 0.3um MIN
- Maximum reflow peak temperature: 260 °C