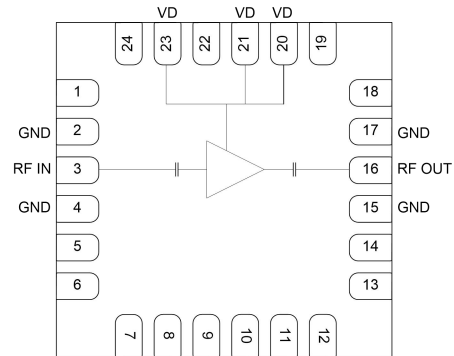


## GaAs MMIC Power Amplifier Chip, 4-20 GHz

### Performance characteristics

- Frequency Range: 4 - 20 GHz
- Small signal gain: 24dB
- Gain Flatness:  $\pm 1.0$ dB
- Noise figure: 4.5dB
- P -1 dB : 20dBm
- Psat: 21dBm
- Power supply: +5 V /150mA
- 50Ohm input / output
- Chip size: QFN 4X4

### Block Diagram



### Product Introduction

GPA-0420F-PQ4 is a broadband low noise amplifier chip with a frequency range of 4GHz~20GHz, a small signal gain of 24dB, and a P-1 output of 20dBm. GPA-0420F-PQ4 is powered by a single +5V power supply. The chip supports +4V, +5V, and +6V operation. The chip is packaged in a 4 x 4 mm plastic surface mount package, and the surface of the pin pad is gold-plated, which is suitable for reflow soldering installation.

### Using the Limit Parameter

Maximum drain voltage	+7V
Maximum input power	+20dBm
Operating temperature	-55 ~ +85°C
Storage temperature	-65 ~ +150°C

Exceeding any of these maximum limits may cause permanent damage.

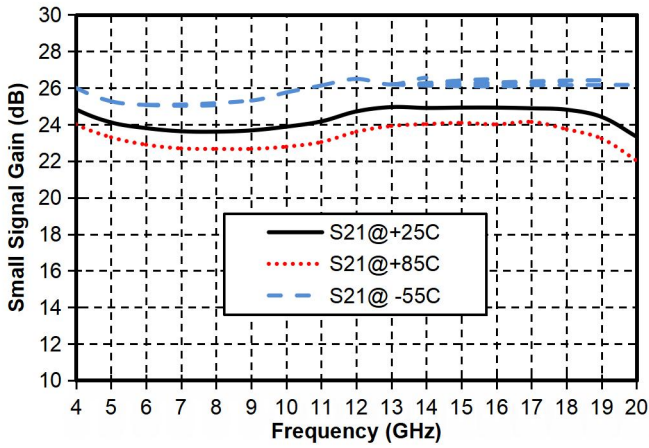
### Electrical performance parameters ( TA = +25°C , Vd=+5V )

Index	Minimum	Typical Value	Maximum	Unit
Frequency Range	4-20			GHz
Small Signal Gain	23	24	-	dB
Gain Flatness	-	$\pm 1.0$	-	dB
P -1dB	-	20	-	dBm
Psat	-	21	-	dBm
Input return loss	-	11	-	dB
Output return loss	-	14	-	dB
Quiescent Current		150		mA

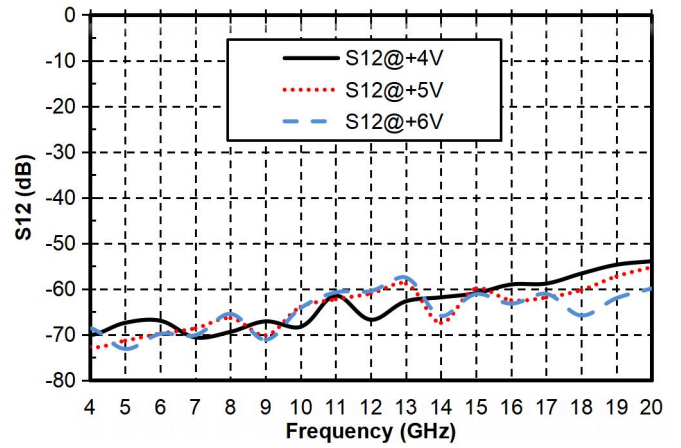
## GaAs MMIC Power Amplifier Chip, 4 - 20 GHz

Main index test curve

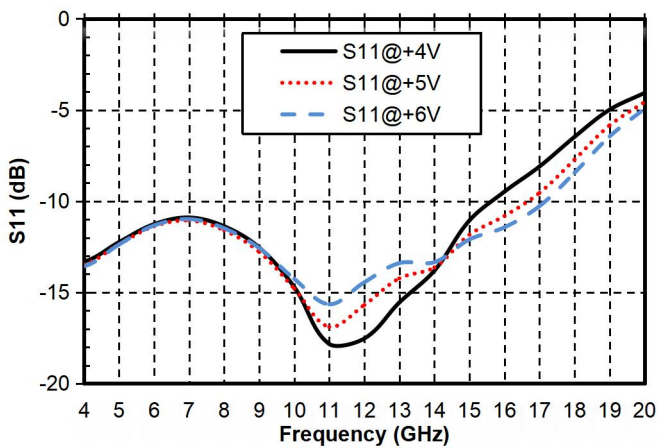
Gain vs. Frequency



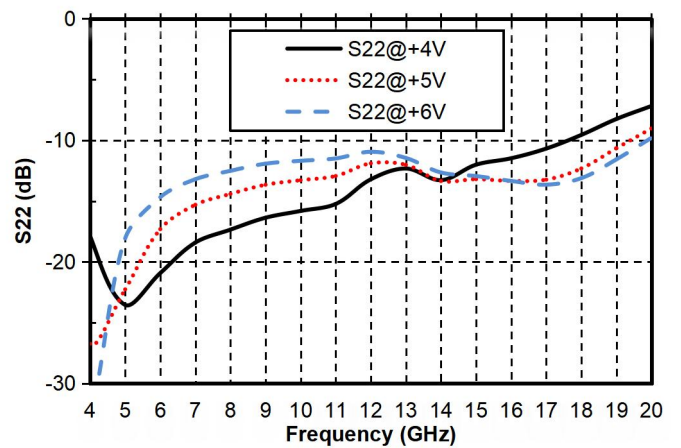
Reverse Isolation vs. Frequency



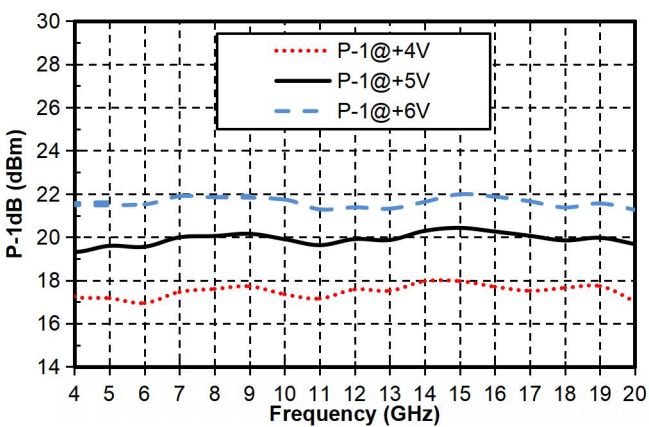
Input Return Loss vs. Frequency



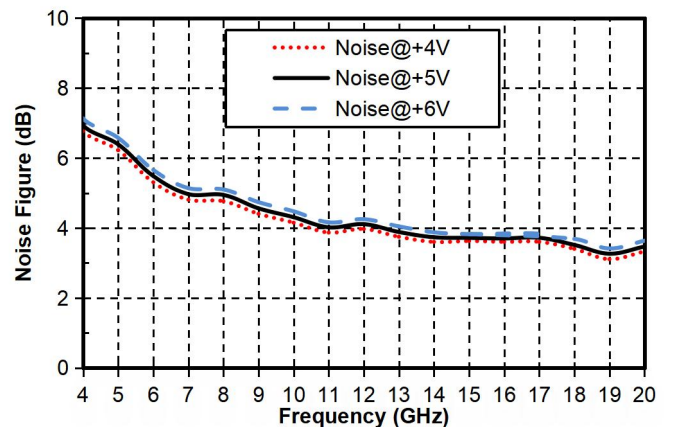
Output Return Loss vs. Frequency



P-1dB vs. Frequency

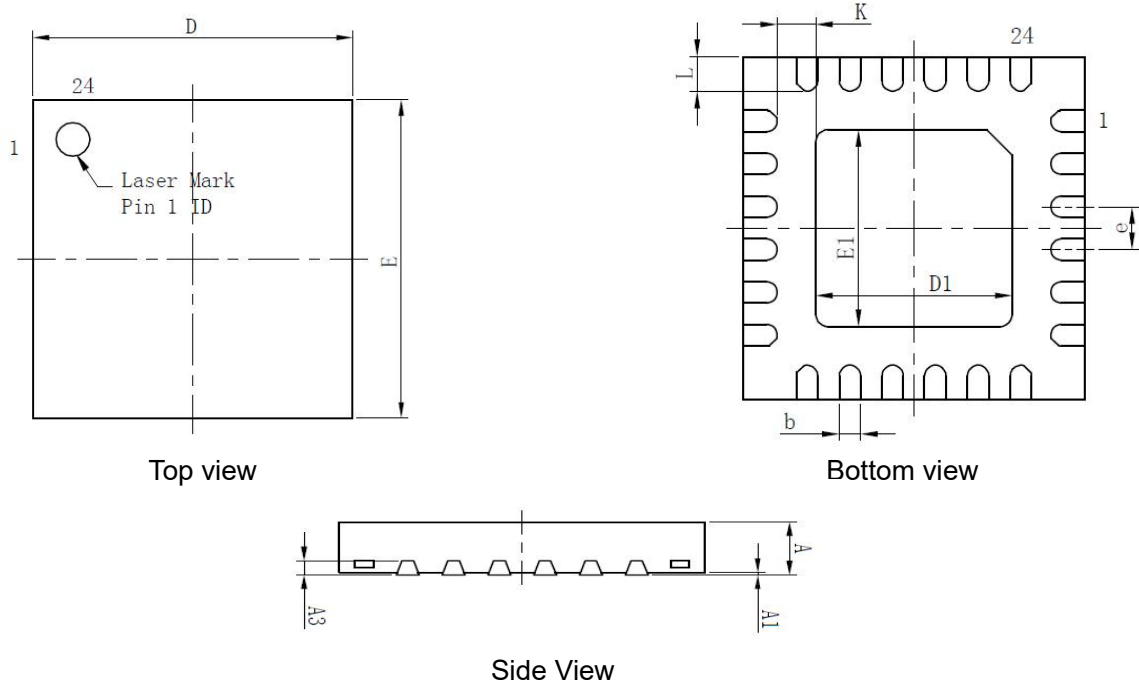


Noise vs. Frequency



## GaAs MMIC Power Amplifier Chip, 4 - 20 GHz

### Appearance structure



Structure size							
Annotation	Minimum	Standard	Maximum	Annotation	Minimum	Standard	Maximum
A	0.70	0.75	0.80	D1	2.20	2.30	2.40
A1	0.00	-	0.05	E1	2.20	2.30	2.40
A3	0.203REF			e	0.5TYP		
b	0.20	0.25	0.30	K	0.20	-	-
D	3.90	4.00	4.10	L	0.30	0.40	0.50
E	3.90	4.00	4.10				

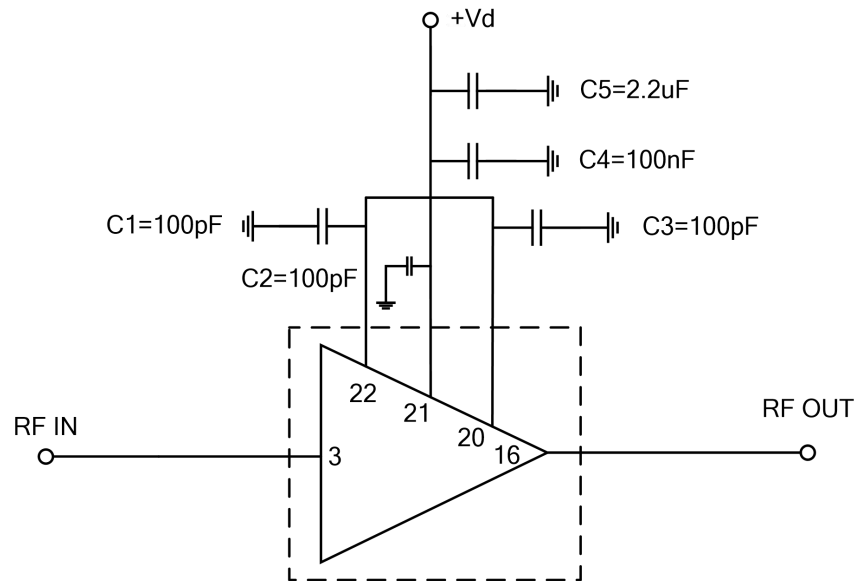
All units in the figures are millimeters .

Pin Definition		
Bonding point number	Function Symbol	Functional Description
3	RFIN	RF signal input terminal, no DC blocking capacitor required
16	RFOUT	RF signal output terminal, no DC blocking capacitor required
20, 21, 23	VDD	Amplifier Drain Bias
2, 4, 15, 17	GND	The bottom of the chip needs to be well grounded to RF

		and DC
1, 5~14, 18, 19, 22, 24	NC	No welding required

## GaAs MMIC Power Amplifier Chip, 4 - 20 GHz

### Recommended Circuit



raw material	Capacitance, inductance, resistance
C1	100pF
C 2	100 pF
C 3	100pF
C4	100nF
C 5	2.2uF

### Precautions for use

- Sealing material: Low-pressure injection molding plastic that meets ROHS specifications
- Lead frame material: copper alloy
- Lead surface plating: 100% matte tin
- Maximum reflow peak temperature: 260 °C