

# SAC3056QP3

GaAs MMIC Low Noise Amplifier  
2GHz~4GHz NF 0.6dB

Rev 1.0

## Features

- Frequency: 2GHz~4GHz
- Gain: 27dB
- Noise Figure: 0.6dB
- Output P<sub>1dB</sub>: 8dBm
- Power Supply: +5V@30mA
- Package Size: QFN

## Typical Applications

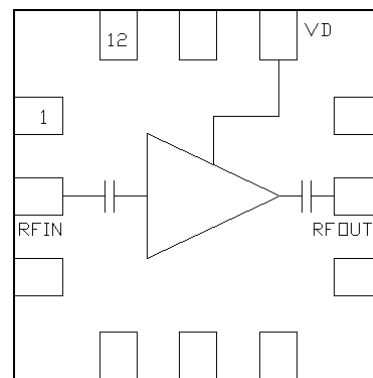
- Microwave radio
- Telecommunication
- Test instrumentation

## General Description

SAC3056QP3 is a GaAs MMIC Low Noise Amplifier in leadless 3x3mm surface mount package, which operates between 2GHz~4GHz. The amplifier can provide 27dB gain, 8dBm Output P<sub>1dB</sub>, 0.6dB noise figure from a +5V supply voltage.

The amplifier I/O's are internally matched to 50 Ohms.

## Functional Diagram



## Electrical Performance ( T<sub>A</sub>=25°C, V<sub>D</sub>= +5V, I<sub>D</sub>=30mA, Z<sub>0</sub>=50Ω )

Parameter	Min	Typ.	Max	Units
Frequency Range	2~4			GHz
Gain	23	27	—	dB
Gain Flatness	—	±1.5	—	dB
Reverse Isolation	-30	-45	—	dB
Input/Output Return Loss	—	-13	-9	dB
Noise Figure	—	0.6	0.8	dB
Output Power for 1 dB Compression (OP <sub>1dB</sub> )	5	8	—	dBm
Output IP <sub>3</sub> *	—	19	—	dBm
Supply Voltage (V <sub>D</sub> )	4.85	5	5.5	V
Supply Current(I <sub>D</sub> )	—	30	—	mA

\*Pout / Tone = 0dBm, f<sub>c</sub>= 3GHz, Δf=5MHz

## Absolute Maximum Ratings

Maximum Input Power	+12dBm	Operating Temperature	-40°C~+85°C
Channel Temperature	150°C	Storage Temperature	-65°C~+150°C
Maximum V <sub>D</sub>	+5.7V		

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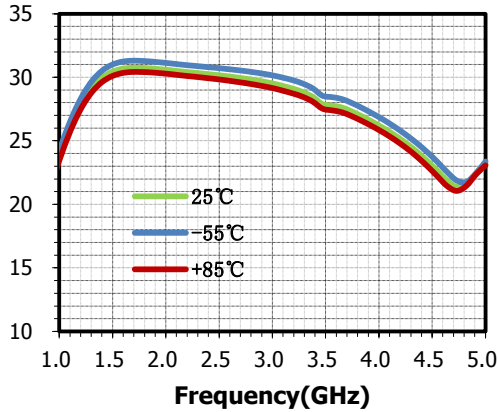
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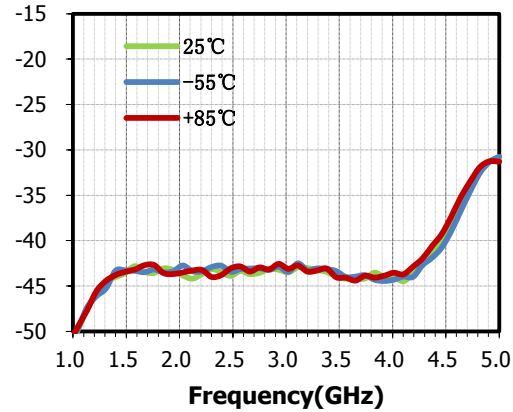
## Typical Performance Curve

The results captured in the test-jig environment within connector plan, then de-embedded the housing and come back in the package plan

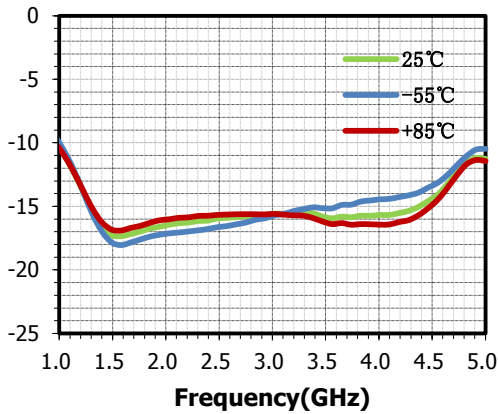
Small Signal Gain(dB) vs.Temperature



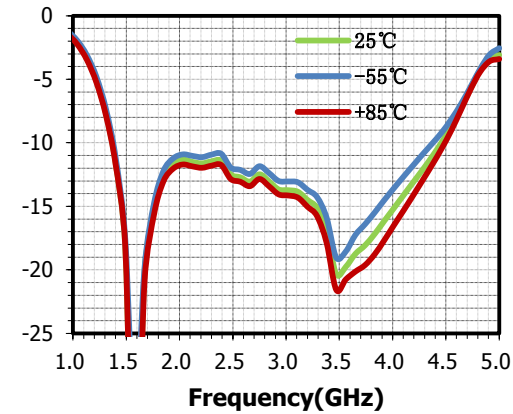
Reverse Isolation(dB) vs.Temperature



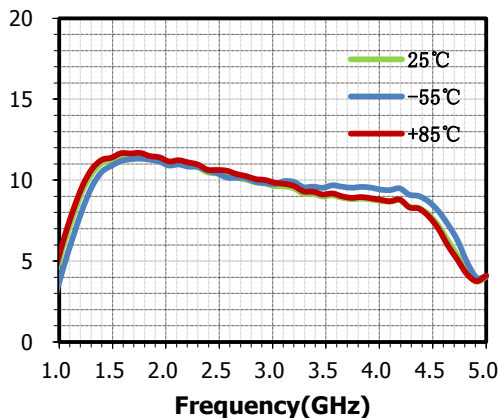
Input Return Loss(dB) vs.Temperature



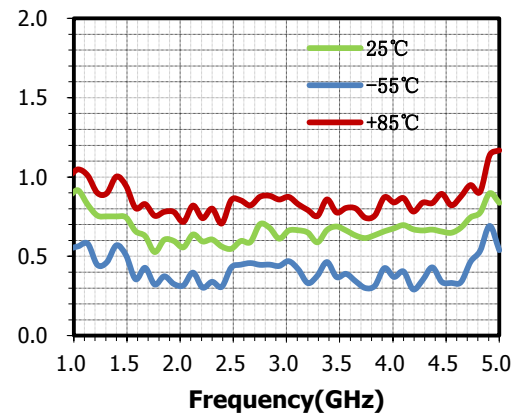
Output Return Loss(dB) vs.Temperature



OP<sub>1</sub>(dBm) vs.Temperature



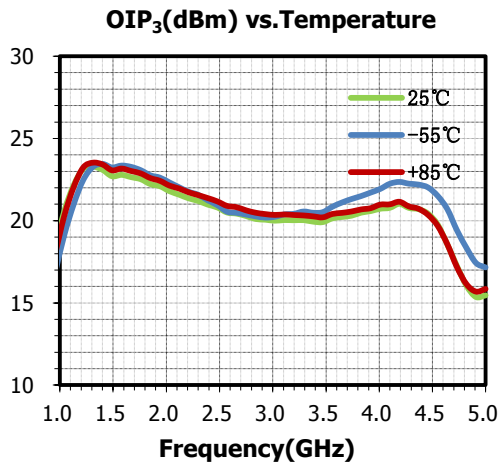
Noise Figure(dB) vs.Temperature



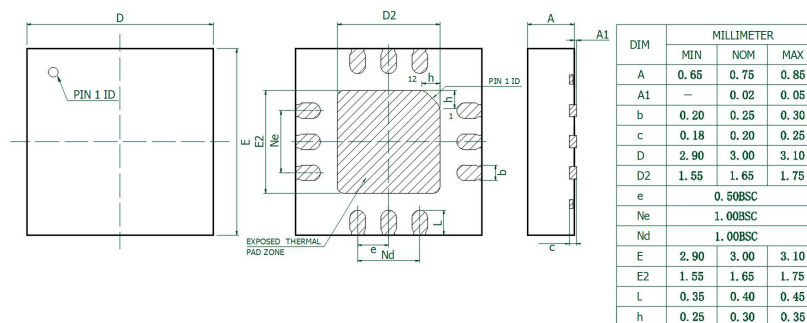
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## Outline Drawing (all dimensions in mm)



## Pin Function

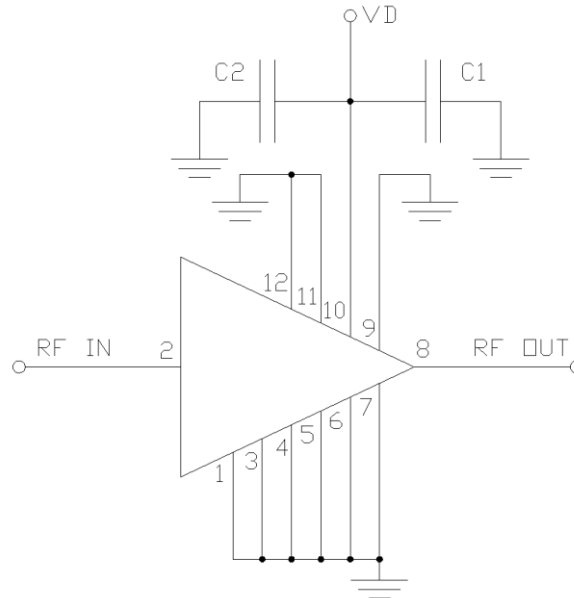
Pin No.	Func.	Pin No.	Func.	Pin No.	Func.
1	Connect to GND	10	VD Supply		
2	RF IN	11	Connect to GND		
3	Connect to GND	12	Connect to GND		
4	Connect to GND				
5	Connect to GND				
6	Connect to GND				
7	Connect to GND				
8	RF OUT				
9	Connect to GND				

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## Application Circuit



## Component list

Reference Des.	Value	Part Number	Manuf.	Size
C1	0.01uF	GRM15R71H103K	MURATA	0402
C2	4700pF	GRM1555C1H472J	MURATA	0402

### Attention:

1. The moisture resistant grade of products is 2A, the storage environment  $\leq 30^{\circ}\text{C}/60\% \text{RH}$ , The surrounding workshop Life is 4 weeks.
2. After un-packing, It is necessary to bake the parts for 6 hours in  $125\pm 5$  degree environment before soldering.