

# SAC3056BQP3



GaAs MMIC Low Noise Amplifier  
2~4GHz

Rev 1.0

## Features

- Frequency: 2~4GHz
- Gain: 29dB
- Noise Figure: 0.4 dB typ. 0.6dB max.
- Single Power Supply: +5V/55mA
- Output IP<sub>3</sub>: 25dBm@2.3GHz
- Size: 3mm×3mm×0.75mm

## Typical Applications

- Wide Band Receiver
- High Density MCM
- EW

## General Description

SAC3056BQP3 is a GaAs MMIC Low Noise Amplifier in QFN over molding surface mount package, which operates between in 2~4GHz.

The amplifier can provide 29dB of gain, 10dBm of output P<sub>-1</sub>dB and 0.4dB noise figure and from a 55mA supply current.

## 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	25	28	32	dB
Gain Flatness	—	±0.75	—	dB
Reverse Isolation	—	39	—	dB
Input VSWR/ Output VSWR	—	1.5	1.75	: 1
Noise Figure	—	0.4	0.6	dB
Output P <sub>-1</sub> dB	11	13	—	dBm
Output IP <sub>3</sub>	—	25*	—	dBm
Supply Current (I <sub>D</sub> )	—	55	70	mA
Supply Voltage (V <sub>D</sub> )	—	5	—	V

\*Pout/Tone=0dBm Fc=2.3GHz, Δf=1MHz

## Absolute Maximum Ratings

Maximum Input Power	+13dBm, CW, 1min	Operating Temperature	-55°C~+85°C
Channel Temperature	+150°C	Storage Temperature	-65°C~+150°C
Supply Voltage	7V		

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# SAC3056BQP3



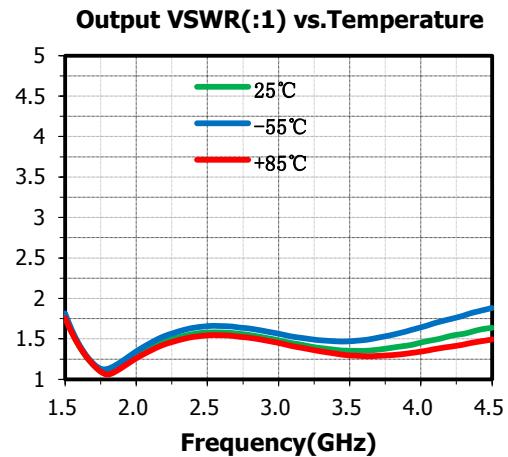
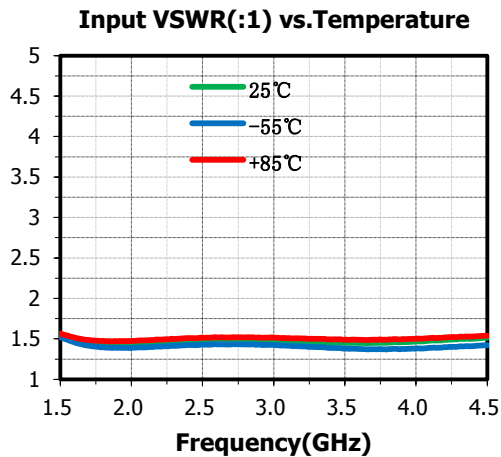
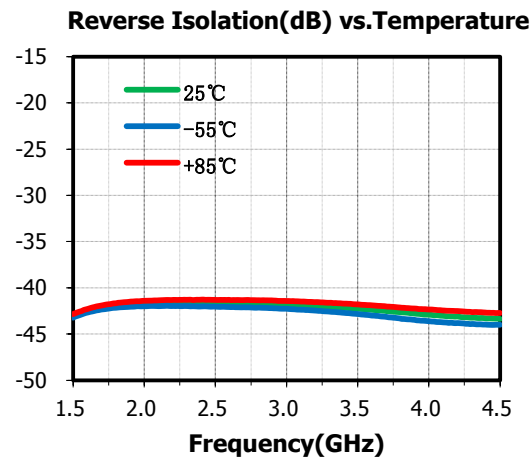
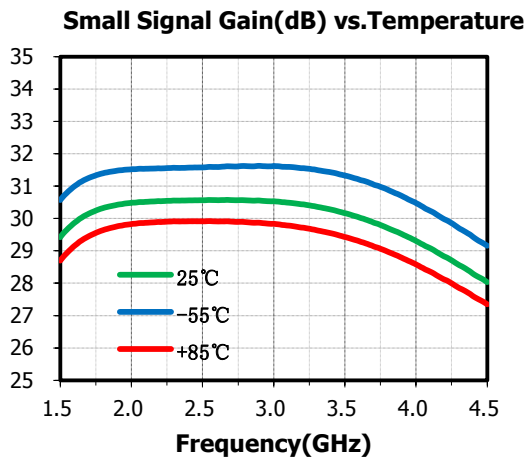
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## Typical Performance Curve

VD=+5V, IDQ=55mA

The following curves are taken from SAC3056BQP3 evaluation board. De-embedding operation has been Implemented.



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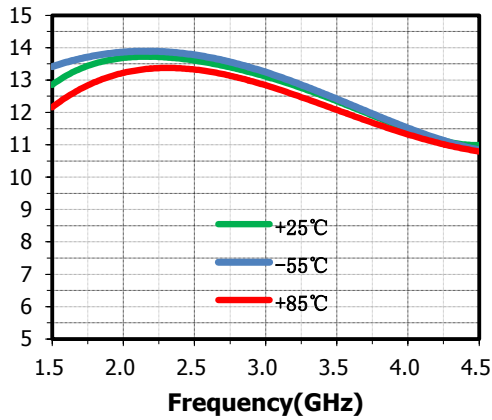
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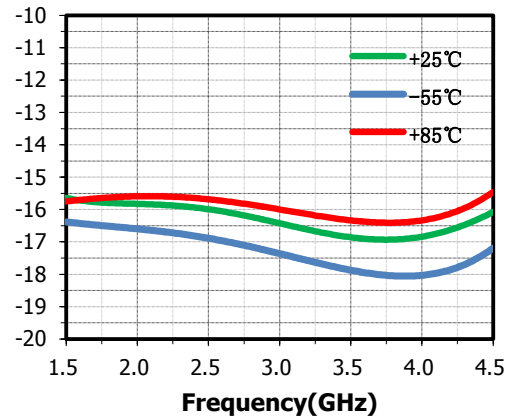
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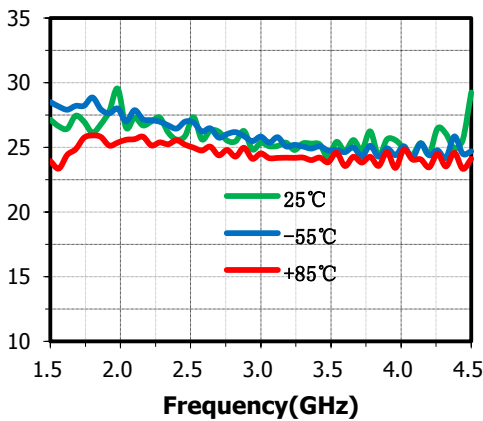
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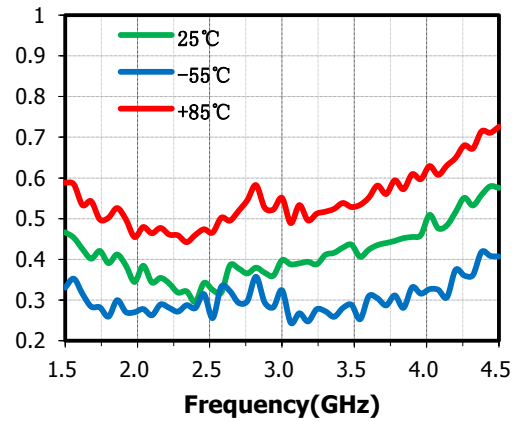
Input P<sub>1</sub>dB(dBm) vs.Temperature



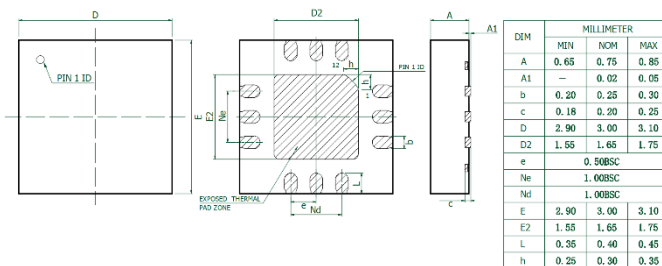
Output IP<sub>3</sub>(dBm) vs.Temperature



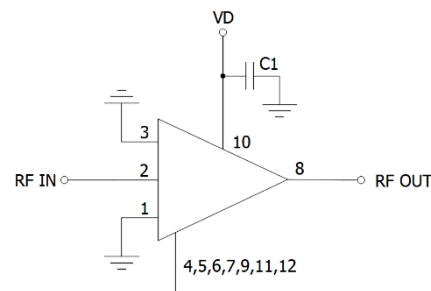
Noise figure(dB) vs.Temperature



## Outline Drawing



## Application Circuit



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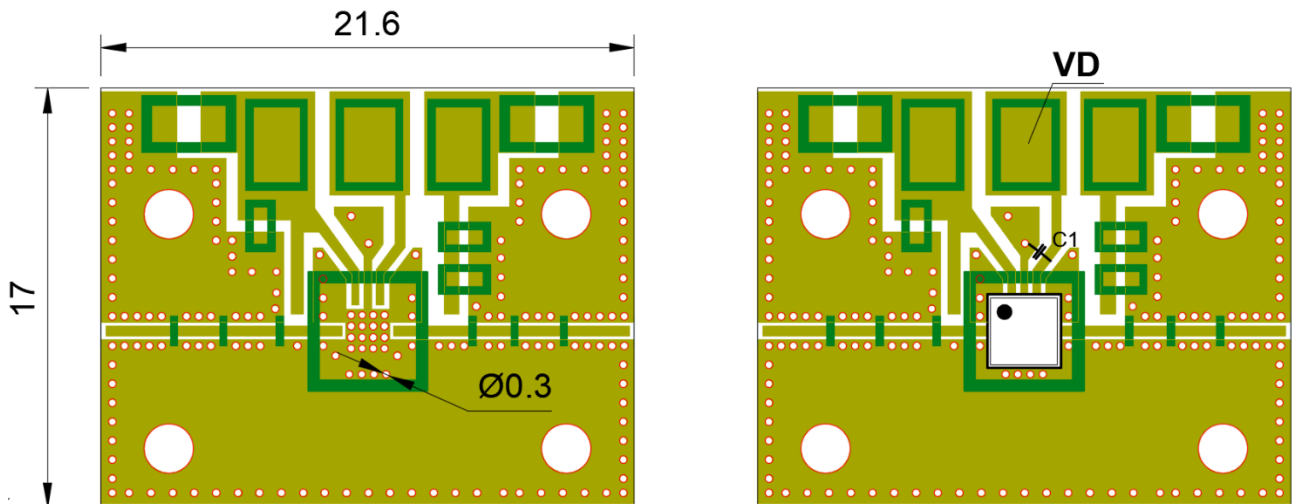
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## Pin Function

Pin No.	Description	Pin No.	Description
1	Connect to ground	7	Connect to ground
2	RF input, AC Coupled	8	RF output, AC Coupled
3	Connect to ground	9	Connect to ground
4	Connect to ground	10	VD
5	Connect to ground	11	NC or Connect to ground
6	Connect to ground	12	NC or Connect to ground

## SAC3056BQP3 Evaluation Board



The Evaluation board is a 2-layer board fabricated using Rogers 4350  $t=0.254$  and using best practices for high frequency RF design. The RF input and RF output traces have a  $50\ \Omega$  characteristic impedance.

## Components List

Reference Des.	Value	Part Number	Manuf.	Size
C1	0.047uF	—	ANY	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.

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