

# SAC4008



GaAs MMIC Low Noise Amplifier  
28~55GHz

Rev 1.0

## Features

- Frequency: 28~55GHz
- Gain: 17dB
- Output P<sub>1dB</sub>: 15dBm@40GHz
- Supply Voltage: +5V@114mA
- Die Size: 1.3mm×1.9mm×0.1mm

## Typical Applications

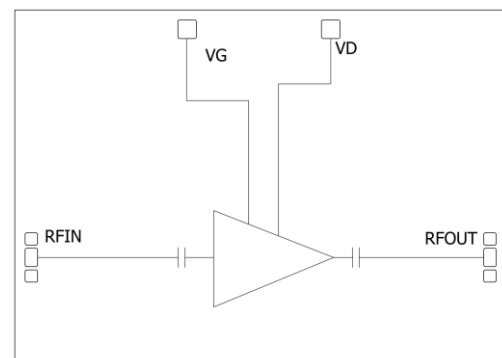
- Microwave radio including point to point communication
- Telecommunication
- Test instrumentation
- SatCom

## General Description

SAC4008 is a GaAs MMIC Low Noise Amplifier die which operates between 28GHz~55GHz. The amplifier can provide 17dB gain, 15dBm Output P<sub>1dB</sub>, 3.5dB noise figure from a 114 mA supply current.

The chip offers full passivation for increased reliability and moisture protection. This amplifier is the perfect alternative to higher cost hybrid amplifiers.

## Functional Diagram



## Electrical Performance ( T<sub>A</sub>=25°C, V<sub>D</sub>=+5V, I<sub>D</sub>=114mA, Z<sub>0</sub>=50Ω )

Parameter	Min.	Typ.	Max.	Units
Frequency Range	28~55			GHz
Gain	16	17	19	dB
Gain Flatness	—	±1	±2	dB
Reverse Isolation	—	50	—	dB
Input VSWR	—	2.0	3.0	:1
Output VSWR	—	1.5	2.0	:1
Noise Figure	—	3.5	6.5	dB
Output Power for 1 dB Compression (OP <sub>1dB</sub> )	13	15	—	dBm
OIP3*	—	24	—	dBm
Supply Current(I <sub>D</sub> )	—	114	—	mA

\* Pin/ Tone = -10dBm

## Absolute Maximum Ratings

Maximum Input Power	+15dBm	Operating Temperature	-55°C~+85°C
Channel Temperature	+150°C	Storage Temperature	-65°C~+150°C

## SuperApex, LLC

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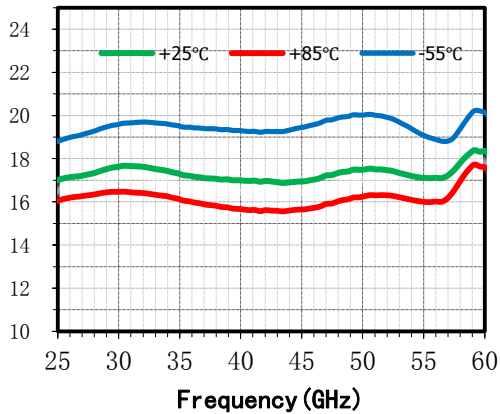
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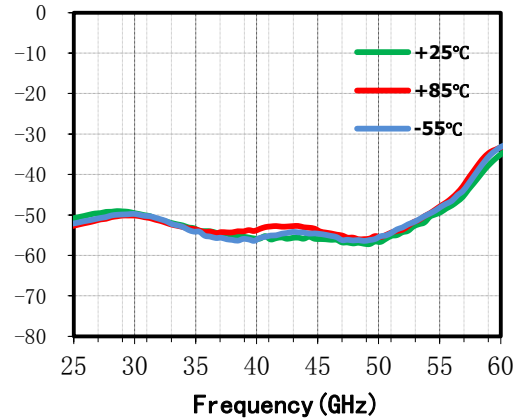
## Typical Performance Curve

$V_D=V_G=+5V$   $I_D=114mA$

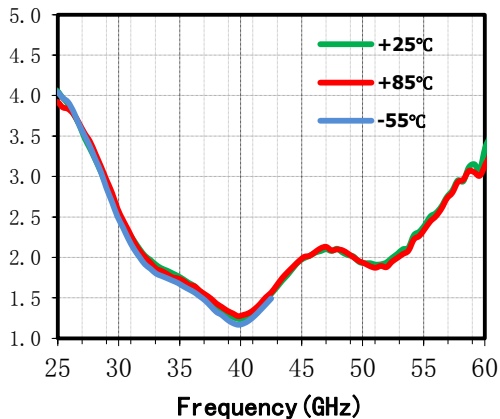
### Small Signal Gain(dB) vs. Temperature



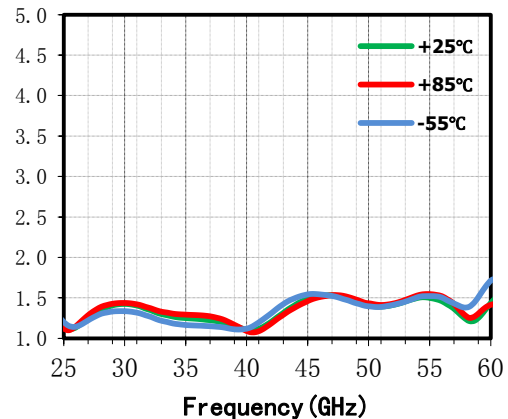
### Isolation(dB) vs. Temperature



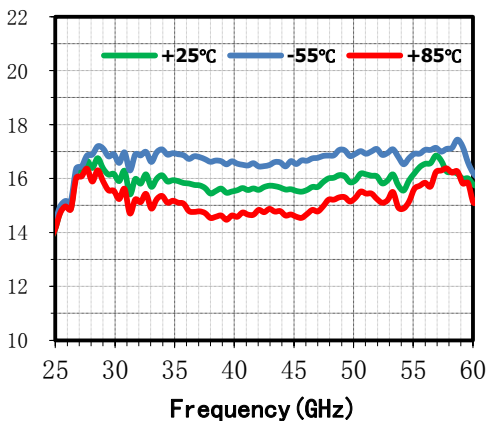
### Input VSWR(:1) vs. Temperature



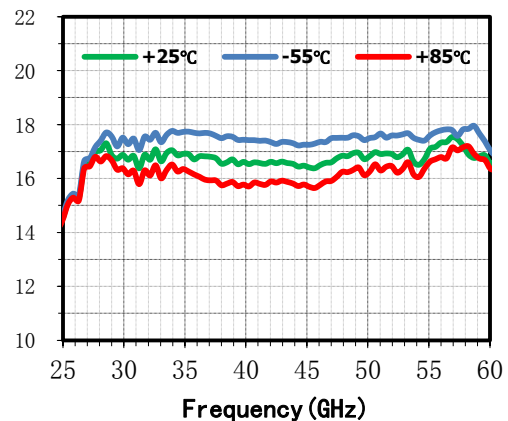
### Output VSWR(:1) vs. Temperature



### OP-1dB (dBm) vs. Temperature



### OP-3dB (dBm) vs. Temperature



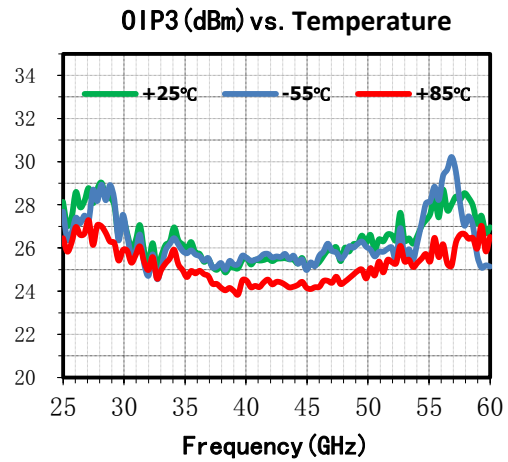
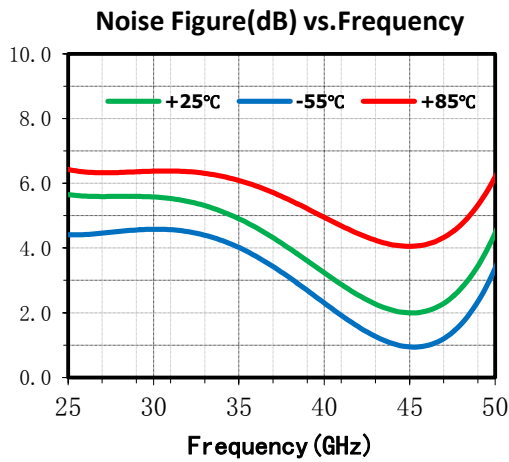
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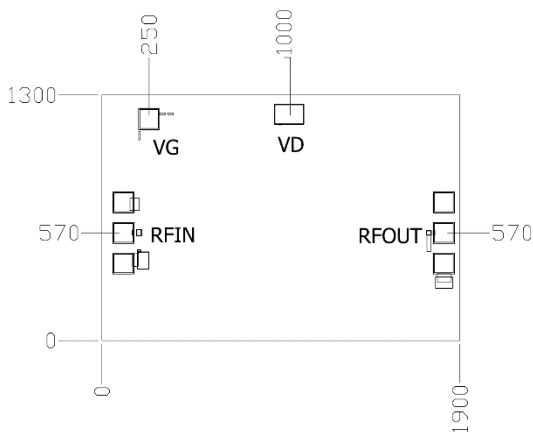
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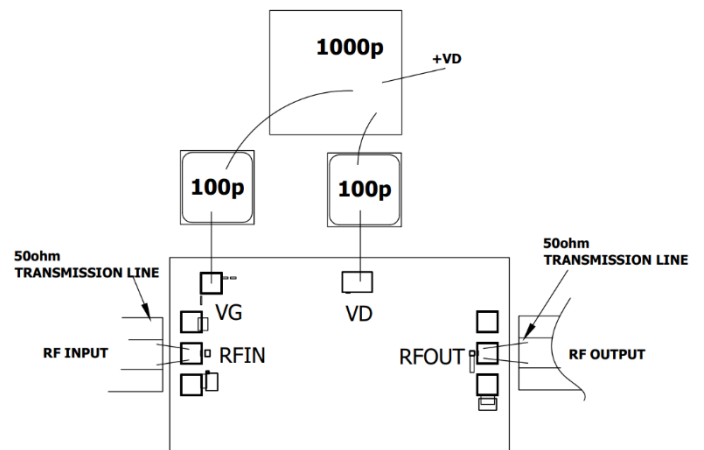
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**Die Outline**  
(All dimensions in mm)



**Assembly Diagram**



**Attention:**

GaAs MMIC devices are susceptible to damage from Electrostatic Discharge. Proper precautions should be observed during handling, assembly and test.

1. ESD is level 0(<250V) at HBM;
2. Legs are coated with gold-plated 4um thickness.