

## Features

- Frequency: 7~11GHz
- 23dB small signal gain<sup>[1]</sup>
- 1.1dB Noise Figure@9GHz typical<sup>[2]</sup>
- 18.5dBm output P<sub>-1dB</sub>@9GHz typical<sup>[3]</sup>
- Die Size: 1.47mmx1.25mmx0.1mm

## General Description

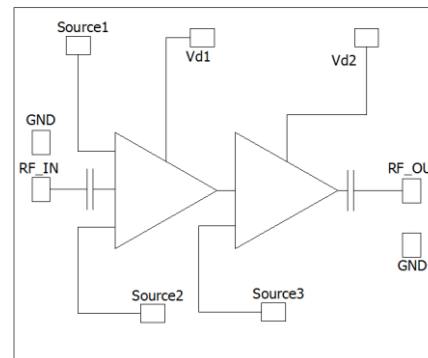
SAC3066 is a GaAs MMIC Low Noise Amplifier die which operates between 7~11GHz. The amplifier can provide 1.1dB noise figure at 9GHz with small signal gain of 23dB across the frequency band. The RF ports are DC blocked and matched to 50Ω.

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

## Typical Applications

- Microwave radio including point to point communication
- Telecommunication
- Weather radar
- Optical communication
- Test instrumentation
- SatCom
- VSAT
- Military and Aerospace

## Functional Diagram



## Electrical Performance

( T<sub>A</sub>=25°C, V<sub>d1</sub>=V<sub>d2</sub>= +5V, I<sub>d1</sub>=28mA, I<sub>d2</sub>=29mA<sup>[5]</sup>, Z<sub>0</sub>=50Ω, )

Parameter	Min	Typ.	Max	Units
Frequency Range	7~11			GHz
Gain	—	22/23 <sup>[1]</sup>	—	dB
Input Return Loss	—	14	—	dB
Output Return Loss	—	14	—	dB
Noise Figure@9GHz	—	1.2/1.1 <sup>[2]</sup>	—	dB
Output Power for 1 dB Compression (OP <sub>-1dB</sub> )	—	16/18.5 <sup>[3]</sup>	—	dBm
Gain Flatness	—	1	—	dB

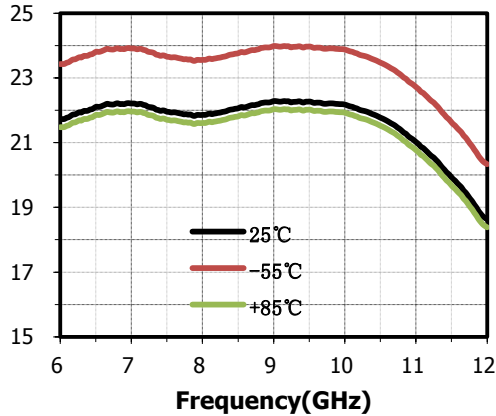
## Absolute Maximum Ratings

Maximum Input Power	+5dBm	Operating Temperature	-55°C~+85°C
Channel Temperature	+150°C	Storage Temperature	-65°C~+150°C

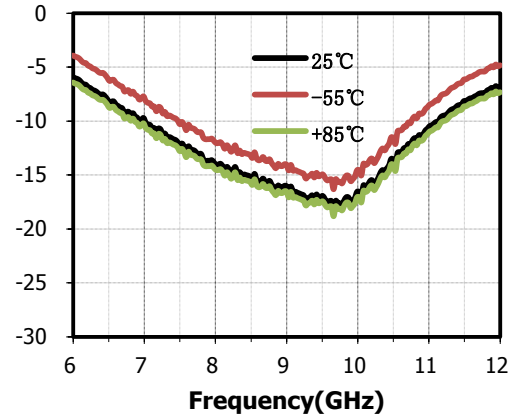
## Typical Performance Curve

( $V_{d1}=5V, I_{d1}=28mA, V_{d2}=5V, I_{d2}=29mA^{[5]}$ )

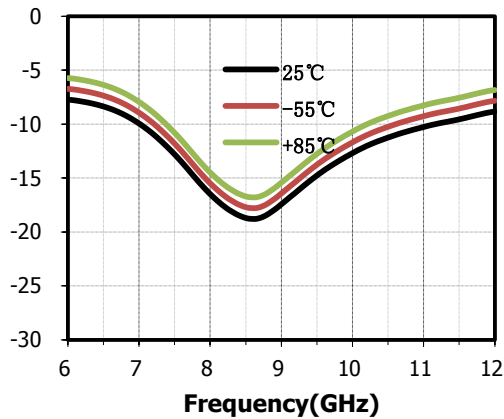
**Small Signal Gain(dB) vs.Temperature**



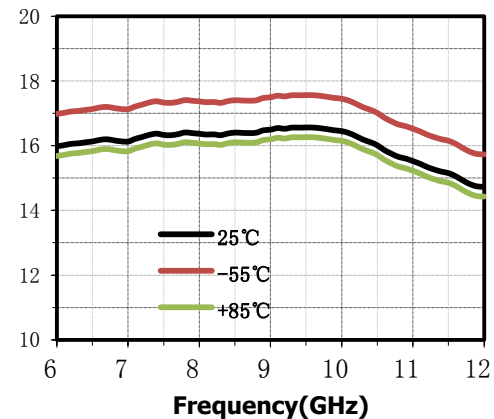
**Input Return Loss(dB) vs.Temperature**



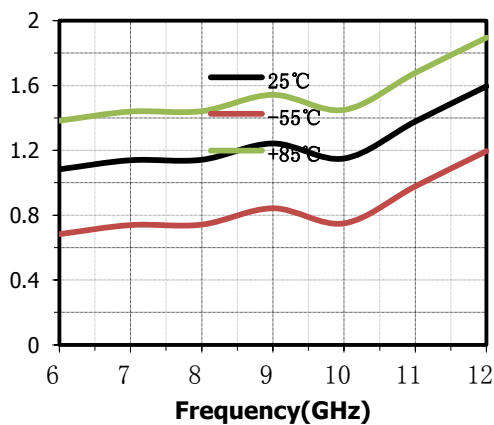
**Output Return Loss(dB) vs.Temperature**



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

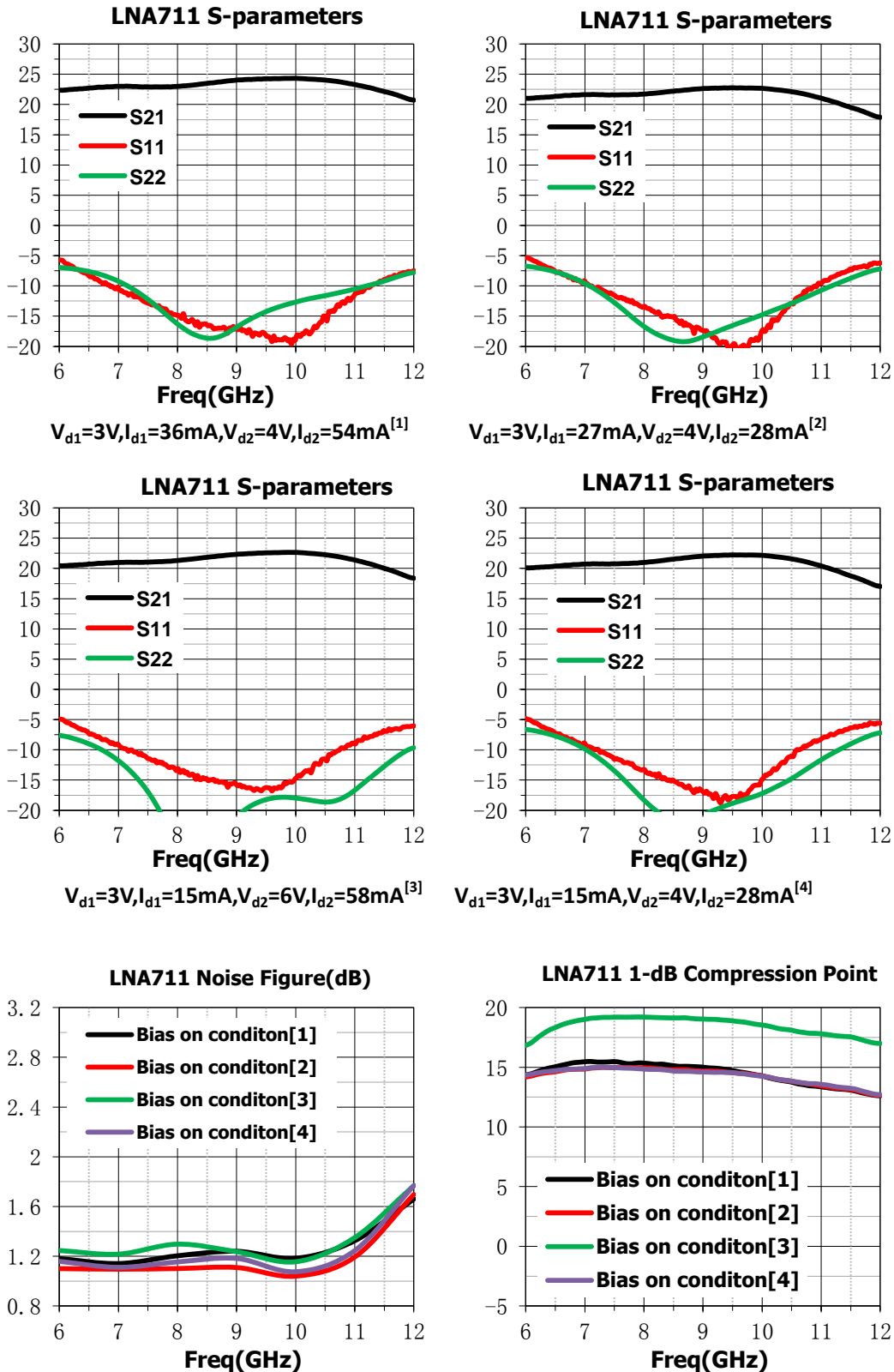


**NF(dB) vs.Temperature**



## Typical Performance Curves

( Bare Die Testing)

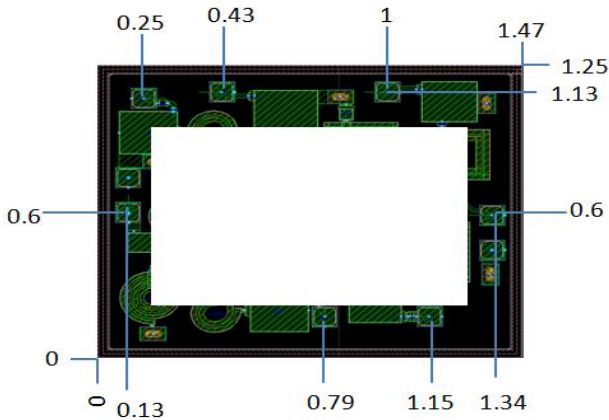


# SAC3066

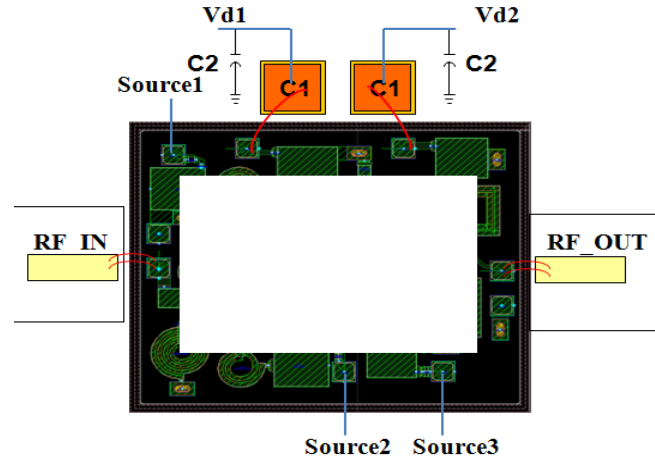
GaAs MMIC Low Noise Amplifier  
7~11GHz

Rev 2.0

## Outline Drawing(mm)



## Assembly Diagram



## Assembly Diagram

PAD	CONNECTION
$V_{d1}, V_{d2}$	Device is self-biased, both connections are required
Source 1/2/3	Optional Connections to GND modifying the bias point, To adjust NF/gain/compression

## Components List

C1	330pF	116RM331M050TT	ATC	—
C2	10nF	GRM155R71H103KA88D	MURATA	0402

### Attention:

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