

Features

- Frequency: 1.0~7.0GHz
- Gain: 12dB@5V, 11dB@8V
- Output P_{-1dB}: 15.5dBm@5V, 18.2dBm@8V
- Noise Figure: 2.7dB@5V, 3dB@8V
- Supply Voltage: +5V@58mA, +8V@60mA
- Die Size: 1.31mm×1.47mm×0.1mm

Typical Applications

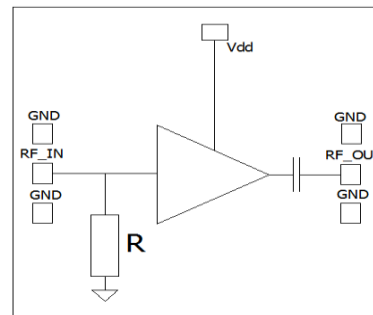
- Radar and ECM
- RF/ Microwave radio
- Military and Space
- Test and Measurement
- Fiber Optics & Broad Telecom

General Description

SAC3037 is a GaAs MMIC low noise amplifier die which operates between 1.0~7.0GHz. The working voltage could vary from +5V to +8V. The amplifier can provide 11dB gain, 18.2dBm Output P_{-1dB} and noise figure 3 dB from a 60mA supply current and +8V Voltage.

The chip uses on-chip metallization process to ensure a good grounding. The chip is carried out on the back metallization process which is suitable for eutectic sintering or conductive adhesive joint technology.

Functional Diagram



Electrical Performance (T_A=25°C, V_D=+5V, R*=0Ω, I_D=58mA, Z₀=50Ω)

Parameter	Min.	Typ.	Max.	Units
Frequency Range	1.0~7.0			GHz
Gain	10.5	12	13.5	dB
Gain Flatness	—	0.8	—	dB
Input VSWR/ Output VSWR	—	—	1.4	:1
Noise Figure	—	—	2.7	dB
Output Power for 1 dB Compression (OP _{-1dB})	15.5	16	—	dBm
Supply Current(I _b)	46	58	70	mA

Electrical Performance (T_A=25°C, V_D=+8V, R*=0Ω, I_D=60mA, Z₀=50Ω)

Parameter	Min.	Typ.	Max.	Units
Frequency Range	1.0~7.0			GHz
Gain	10	11	13	dB
Gain Flatness	—	0.8	—	dB
Input VSWR/ Output VSWR	—	—	1.6	: 1
Noise Figure	—	—	3	dB
Output Power for 1 dB Compression (OP _{-1dB})	16.5	17.5	—	dBm
Supply Current(I _b)	47	60	72	mA

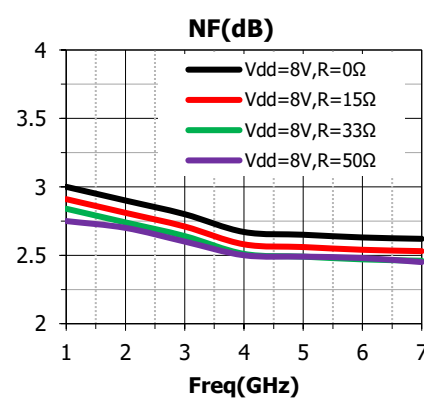
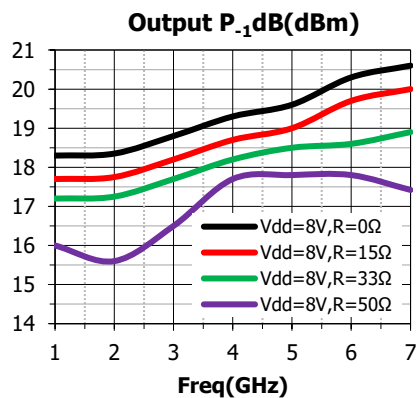
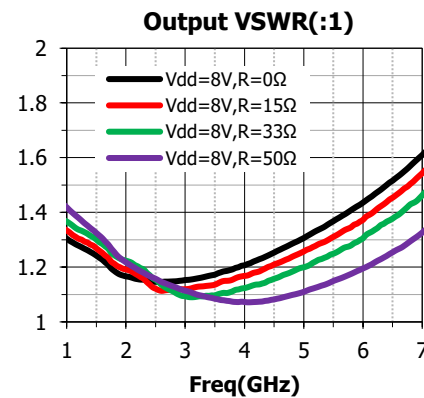
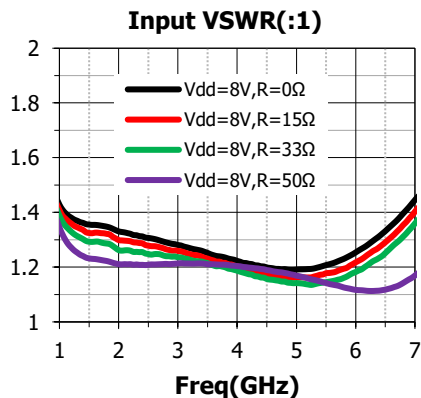
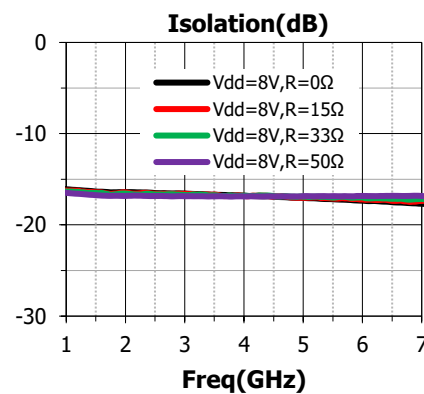
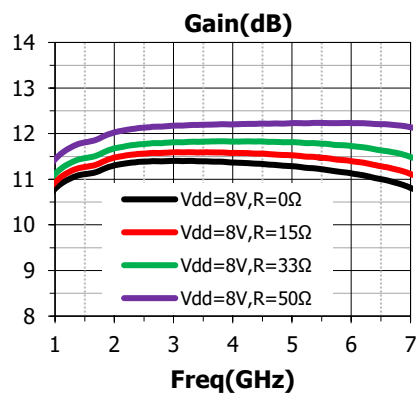
*The Resistor R is needed for the bias at 8V, It is used for optimizing the performance of LNA

Absolute Maximum Ratings

Maximum input power	+20dBm**	Operating Temperature	-55°C~+85°C
Channel temperature	150°C	Storage Temperature	-65°C~+150°C
Thermal Resistance	55°C/W	Drain Bias Voltage	9V

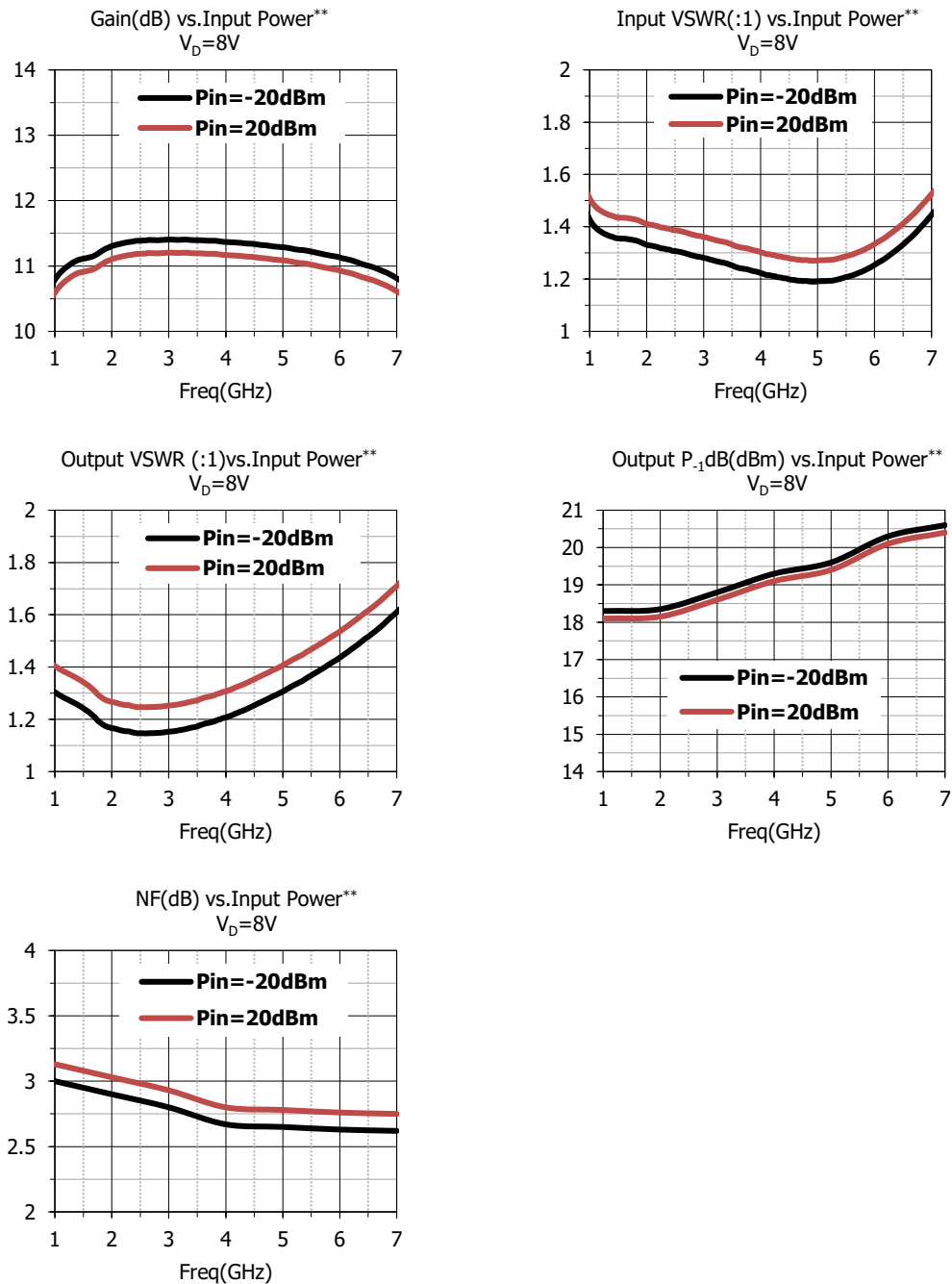
Typical Performance Curve

(V_D=8V Bare Die Testing)



Typical Performance Curve

(**Test Condition:Two minutes 1GHz CW Power)



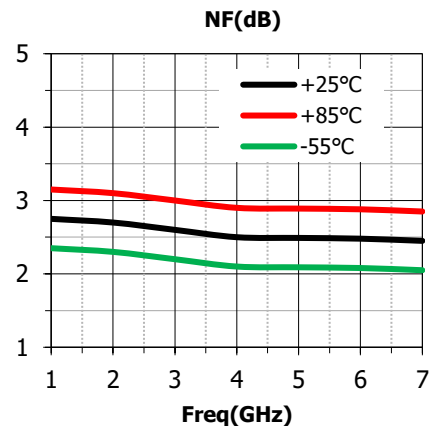
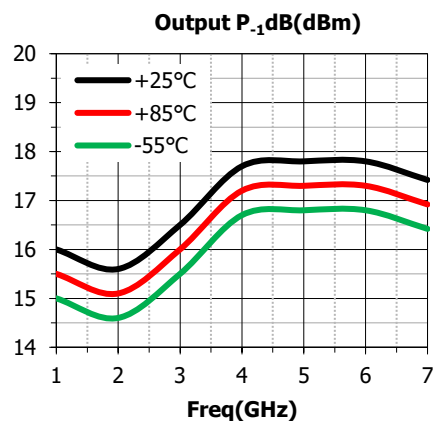
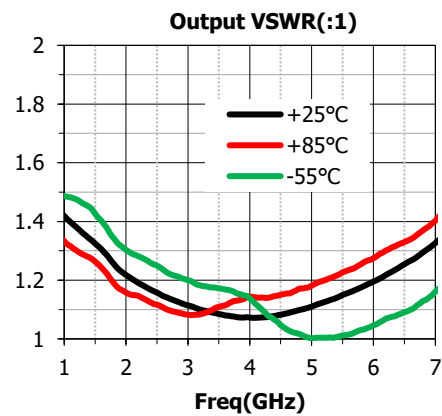
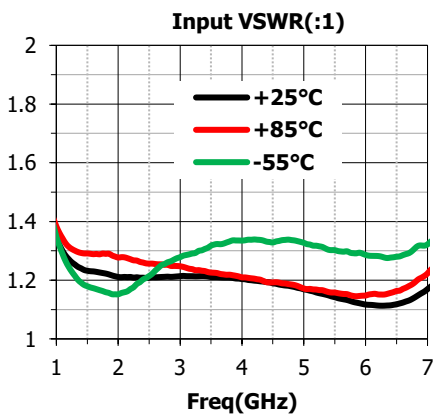
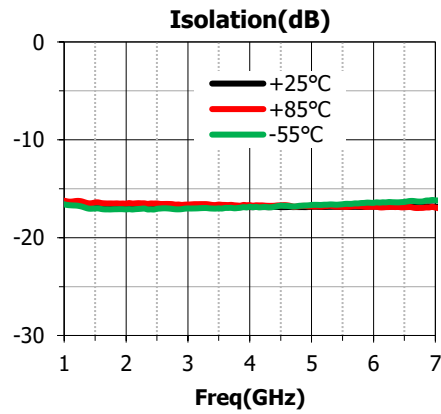
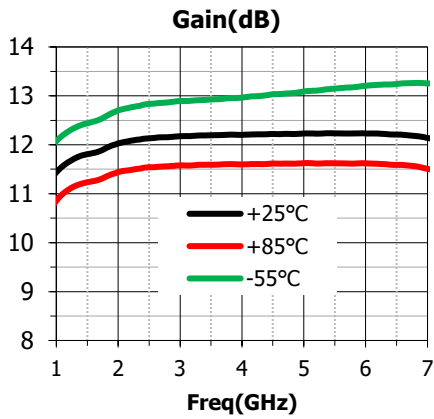
SAC3037



GaAs MMIC Low Noise Amplifier
1.0~7.0GHz

Rev 2.1

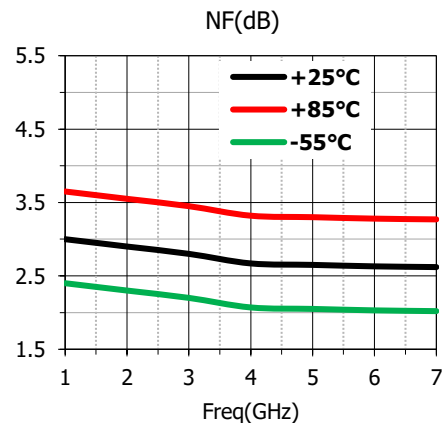
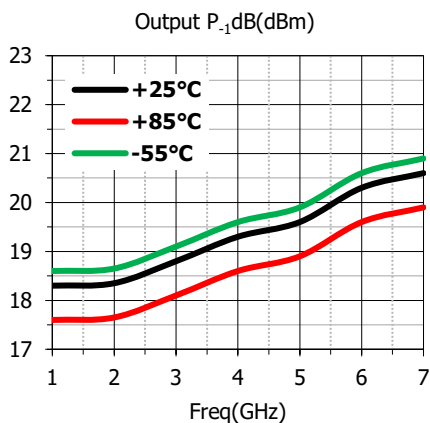
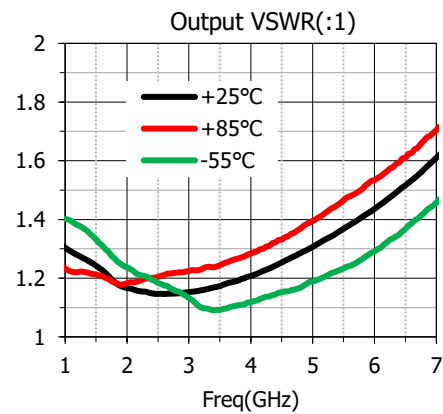
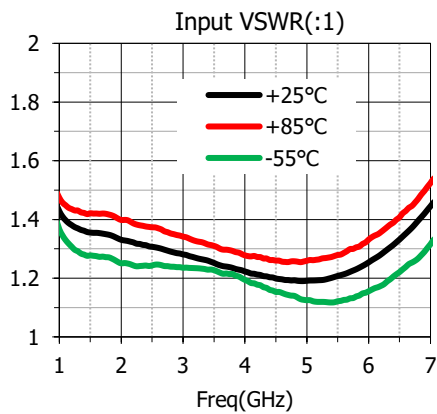
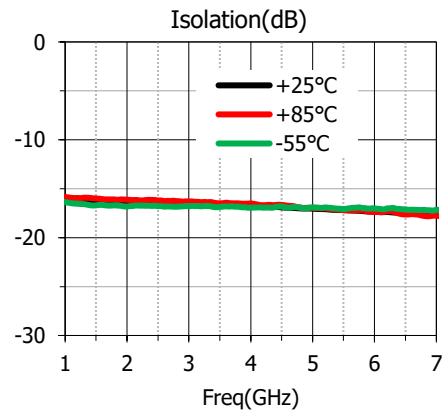
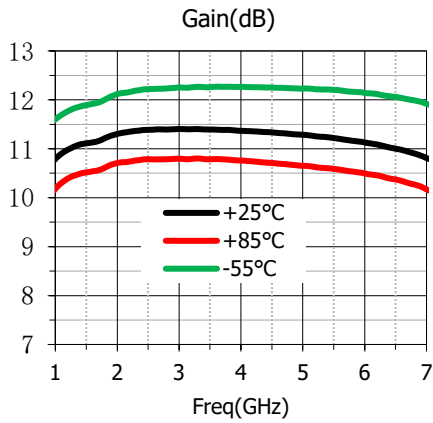
Typical Performance Curves (Vdd=+5V,R=0Ω Bare Die Testing)



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Typical Performance Curves(Vdd=+8V,R=0Ω Bare Die Testing)

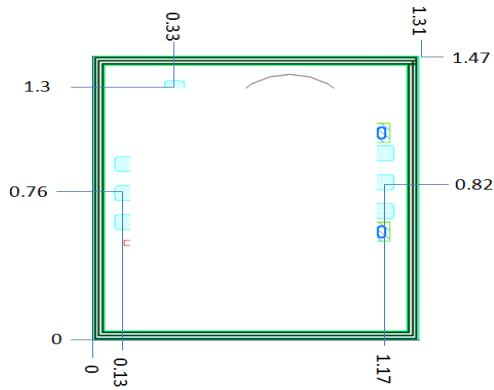


SAC3037

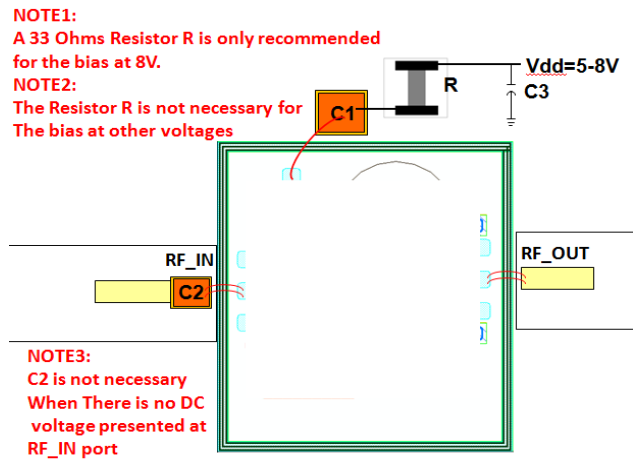
GaAs MMIC Low Noise Amplifier
1.0~7.0GHz

Rev 2.1

Die Outline
(All dimensions in mm)



Assembly Diagram



Components List

Reference Des.	Value	Part Number	Manuf.	Size
C1	330pF	116RM331M050TT	ATC	—
C2	270pF	116RM271M050TT	ATC	—
C3	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.