

SAC3083QP3

GaAs MMIC Low Noise Amplifier
7~13GHz

Rev 1.1

Features

- Frequency: 7~13GHz
- Gain: 20dB
- Noise Figure: 1dB Typ. ,1.3dB Max.
- OP_{-1dB}: 11dBm
- Supply Voltage: +5V@25mA
- Package Size: 3mm×3mm×1.1mm

Typical Applications

- Radar and ECM
- RF/ Microwave radio
- Military and Space
- Test and Measurement

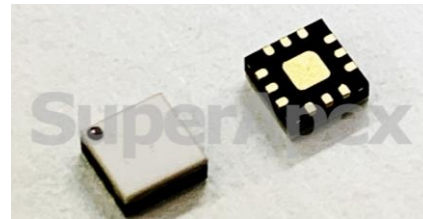
General Description

SAC3083QP3 is a GaAs MMIC Low Noise Amplifier in QFN surface mount package, which operates between in 7~13GHz.

The amplifier can provide 20dB of gain, 11dBm of output P_{-1dB} and 1dB noise figure and from a 25mA supply current.

SAC3083QP3 is assembled in a 3mm x 3mm QFN plastic package.

Picture



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

Parameter	Min	Typ.	Max	Units
Frequency Range	7~13			GHz
Gain	17	20	25	dB
Gain Flatness	—	±1.5	±2.5	dB
Input/Output VSWR	—	1.5	2.2	:1
Noise Figure	—	1	1.3	dB
Reserve Isolation	—	-30	—	dB
Output Power for 1 dB Compression (OP _{-1dB})	10	11	—	dBm
Output Third Order Intercept (OIP ₃)	—	25	—	dBm
Supply Current(I _D)	—	25	35	mA

Absolute Maximum Ratings

Maximum Input Power	+15dBm,CW 30s	Operating Temperature	-55°C~+85°C
Channel Temperature	+150°C	Storage Temperature	-65°C~+150°C
Supply Voltage	+6V		

SAC3083QP3



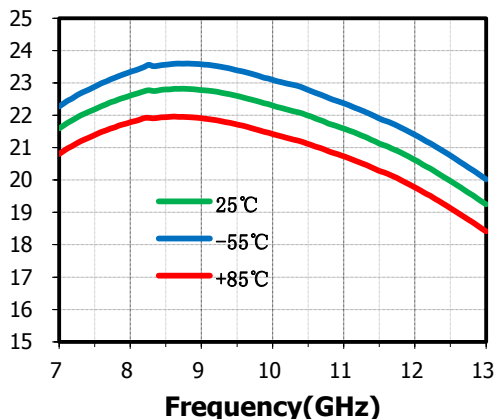
GaAs MMIC Low Noise Amplifier
7~13GHz

Rev 1.1

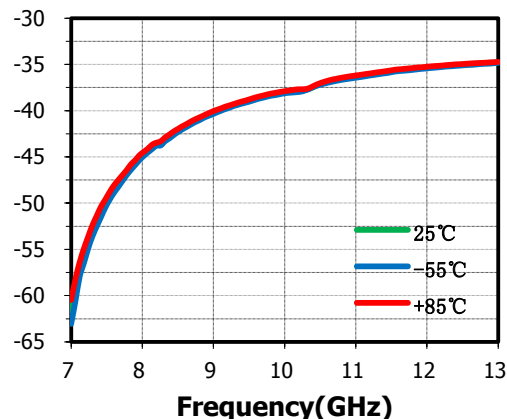
Typical Performance Curve

$V_D=+5V, I_{DQ}=25mA$

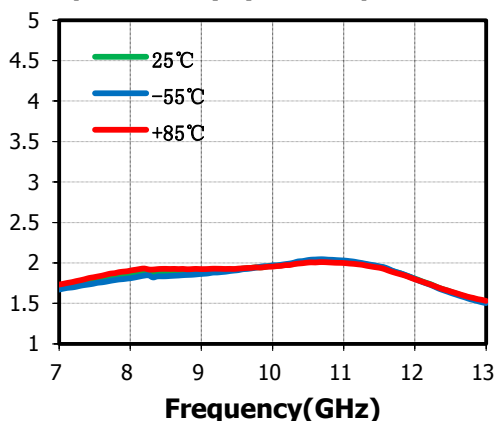
Small Signal Gain(dB) vs.Temperature



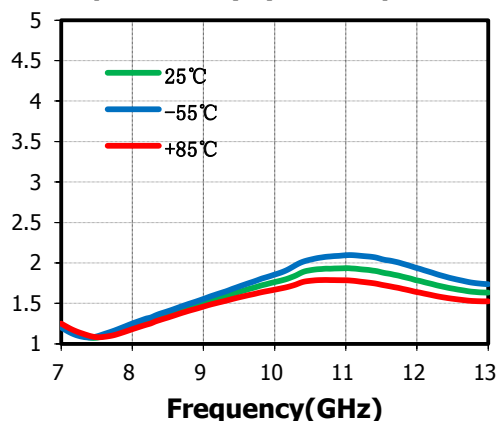
Reverse Isolation(dB) vs.Temperature



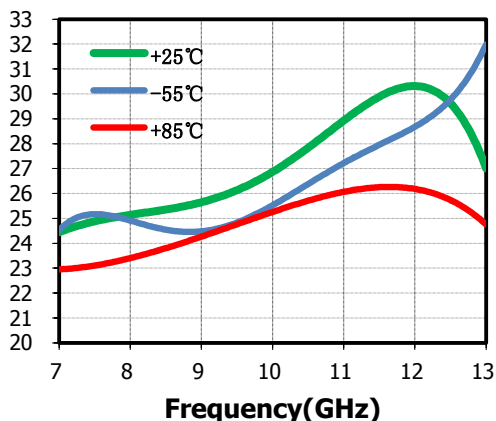
Input VSWR(:1) vs.Temperature



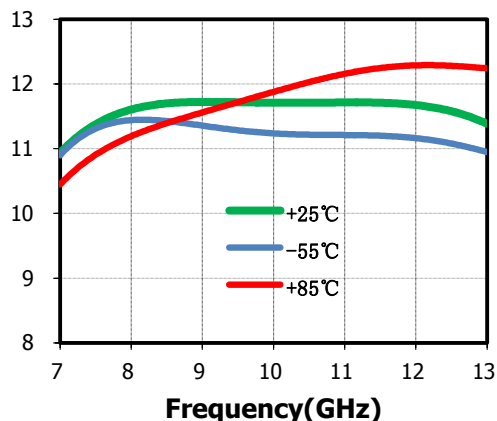
Output VSWR(:1) vs.Temperature



Output IP₃(dBm) vs.Temperature



Output P_{-1dB}(dBm) vs.Temperature

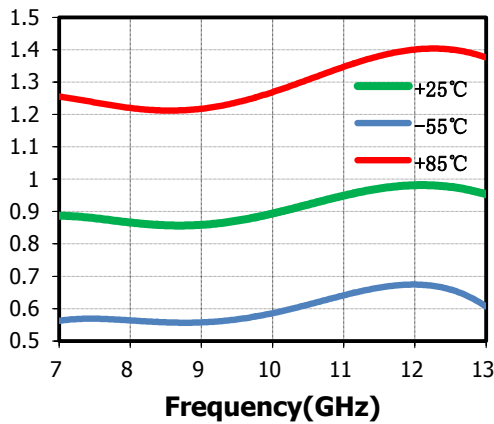


SAC3083QP3

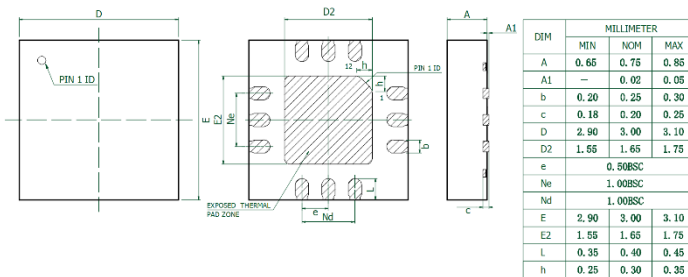
GaAs MMIC Low Noise Amplifier
7~13GHz

Rev 1.1

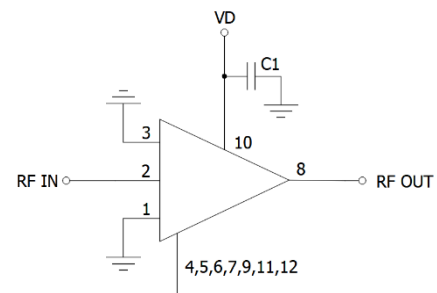
Noise Figure(dB) vs.Temperature



Outline Drawing
(All dimensions in mm)



Application Circuit



Pin Function

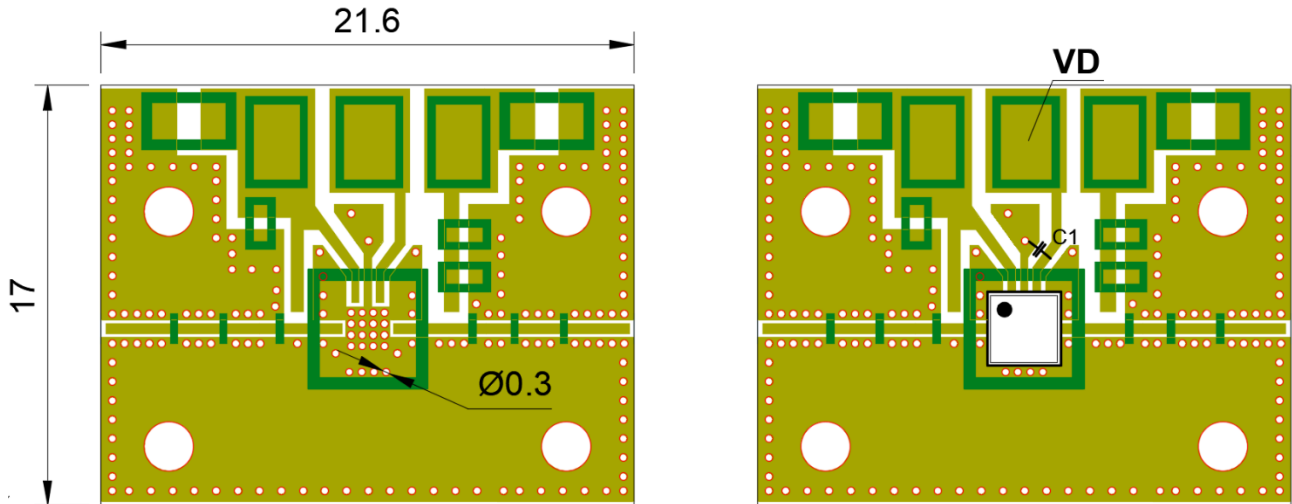
Pin No.	Description	Pin No.	Description
1	Connect to ground	7	Connect to ground
2	RF input, AC Coupled	8	RF output, AC Coupled
3	Connect to ground	9	Connect to ground
4	Connect to ground	10	Drain(VD)
5	Connect to ground	11	NC or Connect to ground
6	Connect to ground	12	NC or Connect to ground

SAC3083QP3

GaAs MMIC Low Noise Amplifier
7~13GHz

Rev 1.1

SAC3083QP3 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.
C1	0.01uF	GRM0336R61A103KE	Murata

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 ± 5 degree environment before soldering.