

SAC3013Q

GaAs MMIC Low Noise Amplifier
0.9GHz~1.5GHz

Rev 1.1

Features

- Frequency: 0.9GHz~1.5GHz
- Gain: 17dB
- Noise Figure: 0.7dB
- Supply Voltage: +5V@40mA
- Operation Frequency can be adjusted.
- Output P_{1dB} and Bias Current can be adjusted.
- Package Size: 3mm×3mm×1.2mm

Typical Applications

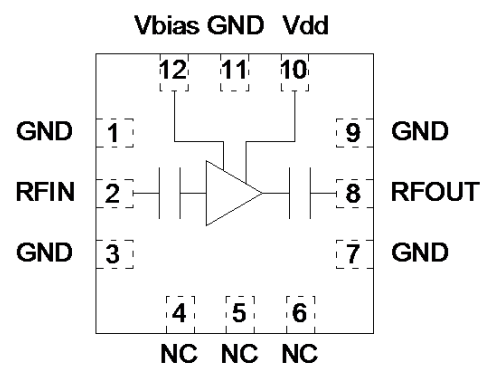
- Radar and ECM
- RF/ Microwave radio
- Military and Space
- Test and Measurement
- Fiber Optics

General Description

SAC3013Q3 is a GaAs MMIC low noise amplifier die which operates between 0.9GHz~1.5GHz. The amplifier can provide 17dB gain, 12dBm Output P_{1dB} and 0.7dB noise figure from 40 mA supply current.

The LNA requires minimal external components to optimize the RF input match, RF ground and DC bias for applications which require improved noise figure.

Functional Diagram



Electrical Performance (T_A=25°C, V_D=+5V, I_D=40mA, Z₀=50Ω)

Parameter	Min.	Typ.	Max.	Units
Frequency Range	0.9~1.5			GHz
Gain	—	17	—	dB
Gain Flatness	—	2.2	—	dB
Reverse Isolation	—	-28	—	dB
Input/Output VSWR	—	1.5	—	:1
Noise Figure	—	0.7	—	dB
Output Power for 1 dB Compression (OP _{1dB})	—	12	—	dBm
Output Third Order Intercept (OIP ₃)	—	22.5	—	dBm
Supply Current(I _D)	—	38	—	mA

* Operation Frequency can be adjusted by modifying L1 value

** Output P_{1dB} and Bias current can be adjusted by modifying Resistor R1 value.

Absolute Maximum Ratings

Maximum Input Power	+18dBm	Operating Temperature	-55°C~+85°C
Channel Temperature	+150°C	Storage Temperature	-65°C~+150°C

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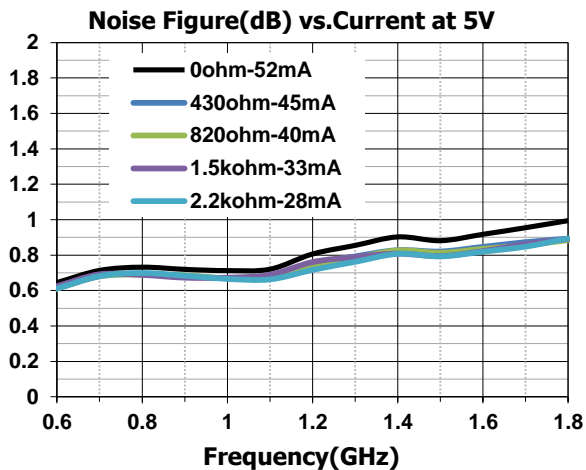
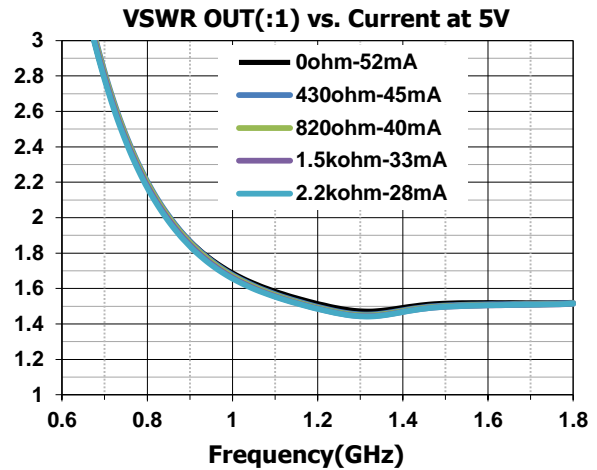
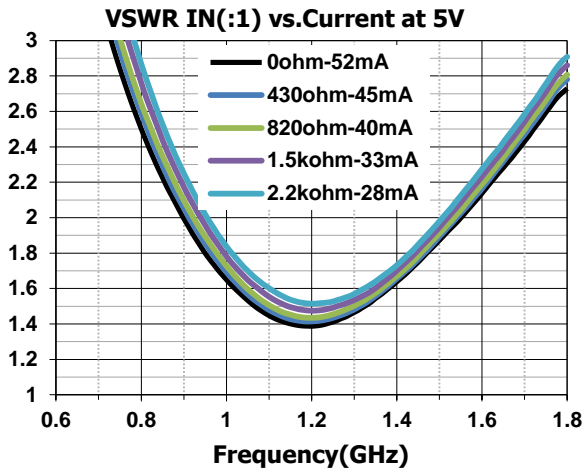
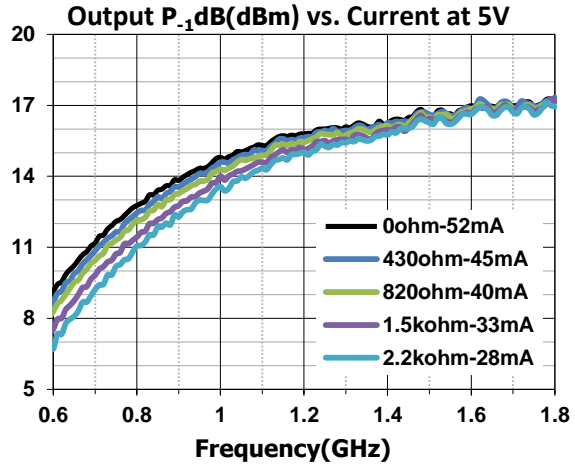
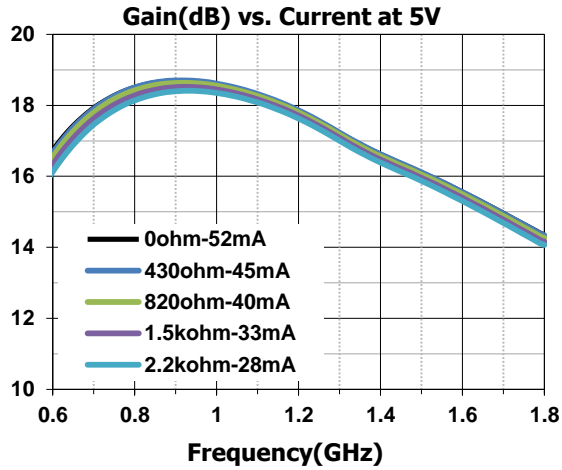
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Typical Performance Curve vs. Power Supply



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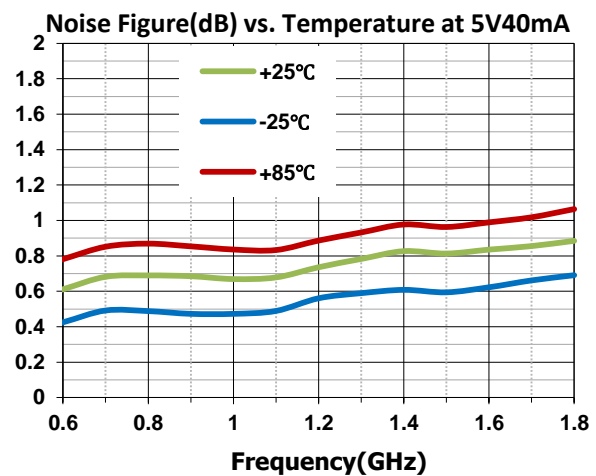
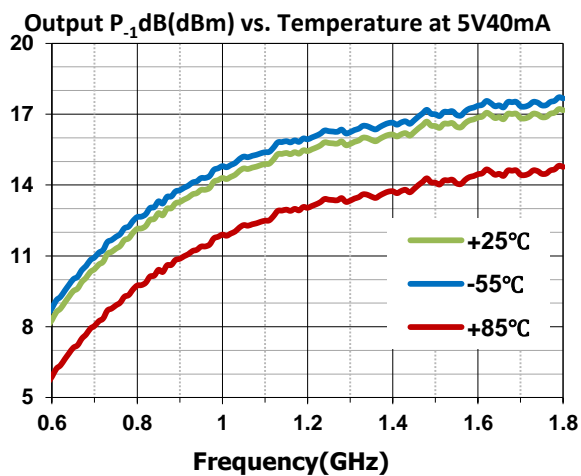
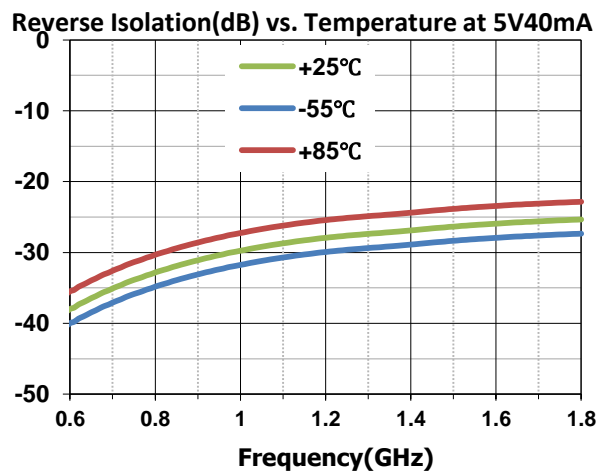
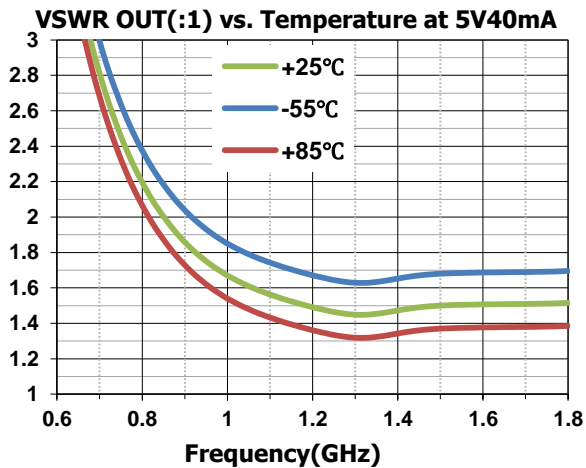
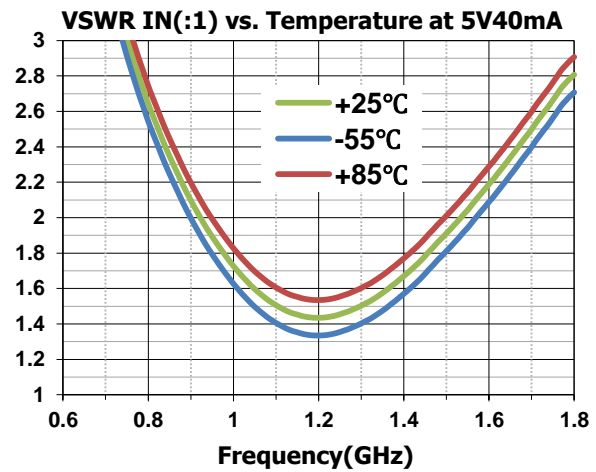
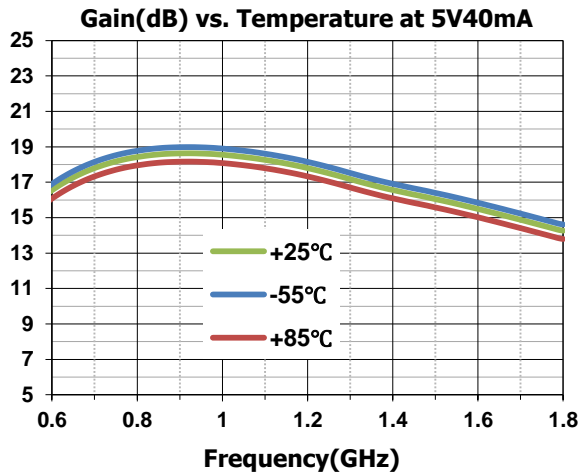
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Typical Performance Curve vs. Temperature



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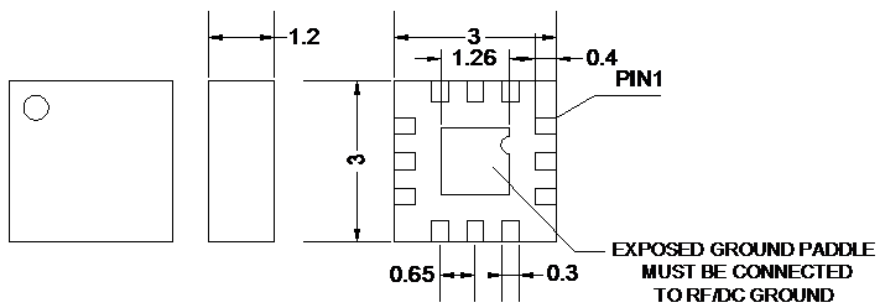
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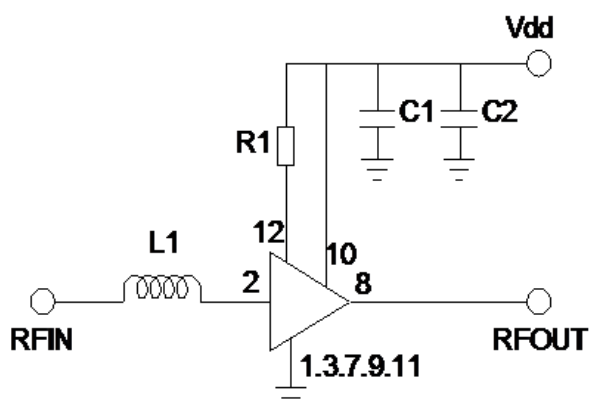
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Outline Drawing (All dimensions in mm)



Assembly Diagram



Components List

Reference Des.	Value	Part Number	Manuf.	Size
C1	100pF	CHIP CAPACITOR	RADVISTA	—
C2	10nF	GRM155R71H103KA88D	MURATA	0603
R1	0Ω-2.2kΩ	—	—	0603
L1	6.2nH	0402CS-6N2XGE	COILCRAFT	0603

Attention:

1. The moisture resistant grade of products is 2A, the storage environment $\leq 30^{\circ}$ C/60% 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.

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