

SAC3078QP3

GaAs MMIC Low Noise Amplifier
2~6GHz

Rev 1.2

Features

- Frequency: 2~6GHz
- Gain: 26dB
- Noise Figure: 0.8dB typ. 1.1dB max.
- Single Power Supply: +4~5V/50~60mA
- OutputP_{-1dB}: 14dBm@5GHz
- Package Size: 3mm×3mm×1.1mm

Typical Applications

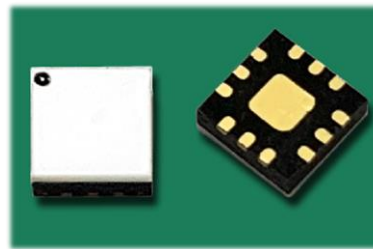
- Radar and ECM
- C band Low Noise Amplifier

General Description

SAC3078QP3 is a GaAs MMIC Low Noise Amplifier die, which was packaged in shell of QFN. The side of a shell is 6mm. The device operates between in 2~6GHz.

The device can provide 26dB gain, 14dBm OutputP_{-1dB}, less than 1.1dB noise figure, while requiring 60mA from a +5V supply.

Picture



Electrical Performance (T_A=25°C, V_D=+5V, I_D=60mA, Z₀=50Ω)

Parameter	Min	Typ.	Max	Units
Frequency Range		2~6		GHz
Gain	23	26	28	dB
Gain Flatness	—	±1	—	dB
Reverse Isolation	—	-33	—	dB
Input/Output VSWR	—	1.5	2.2	:1
Noise Figure	—	0.8	1.1	dB
Output Power for 1 dB Compression (OP _{-1dB})	13	14	—	dBm
Output Third Order Intercept (OIP ₃)	—	27*	—	dBm
Supply Current(I _D)	—	60	70	mA
Supply Voltage(V _D)	4	—	5	V

*Pout/Tone=0dBm Fc=5GHz,Δf=1MHz

Absolute Maximum Ratings

Maximum Input Power	+13dBm,CW 1min	Operating Temperature	-55°C~+85°C
Channel Temperature	150°C	Storage Temperature	-65°C~+150°C
Maximum V _D	+6V		

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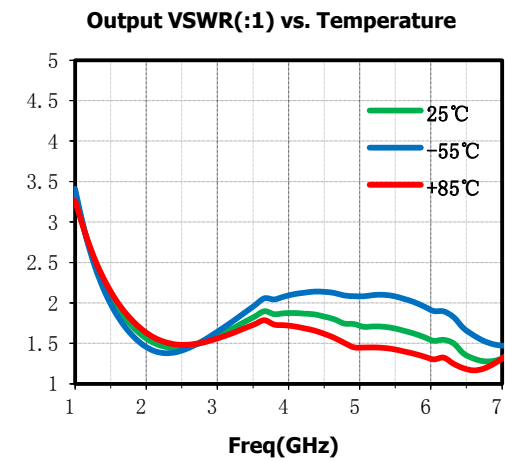
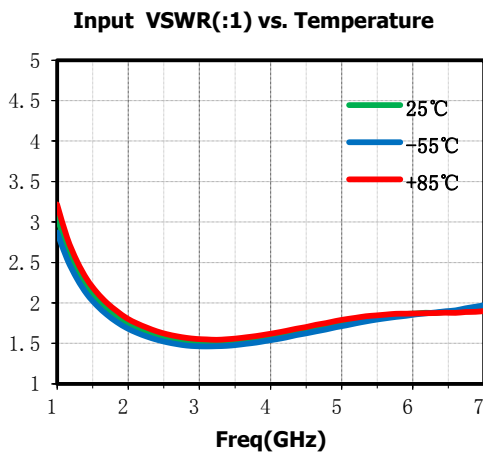
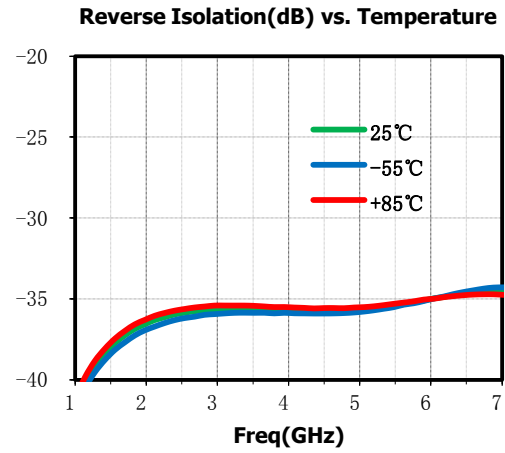
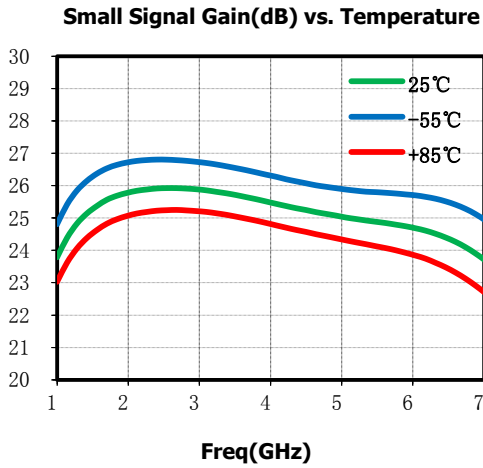


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Typical Performance Curve

$V_D=+4V$, $I_{DQ}=50mA$



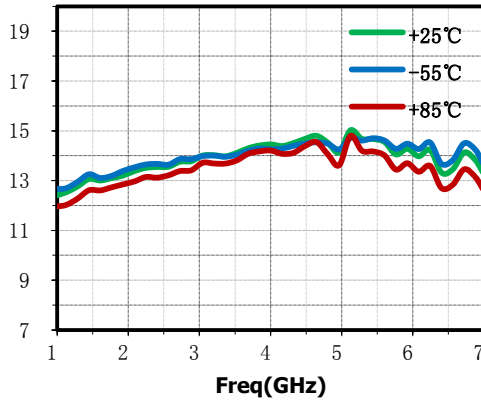
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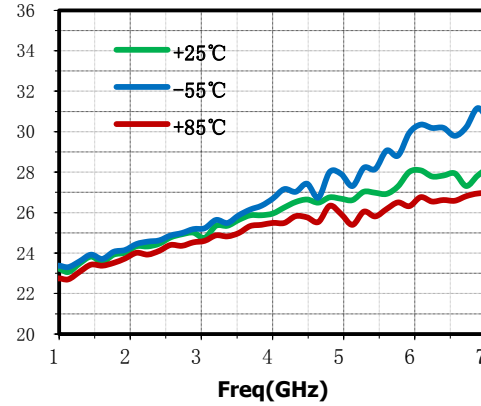
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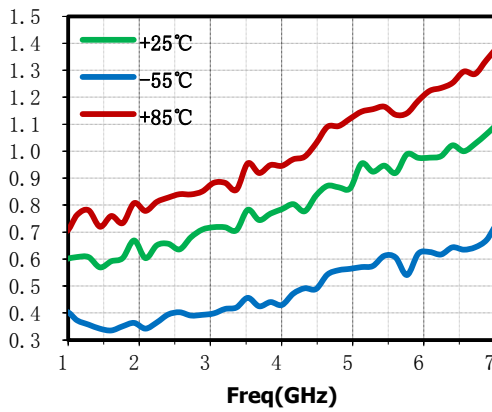
OP₁(dBm) vs. Temperature



OIP₃(dBm) vs. Temperature

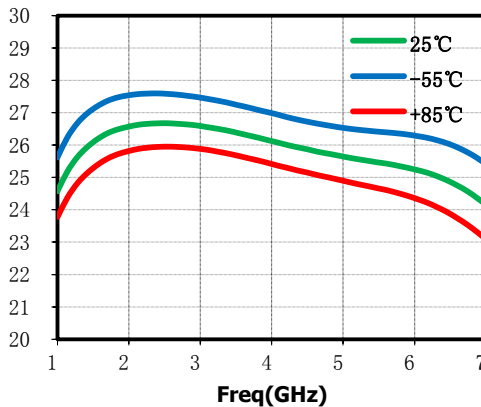


Noise Figure(dB) vs. Temperature

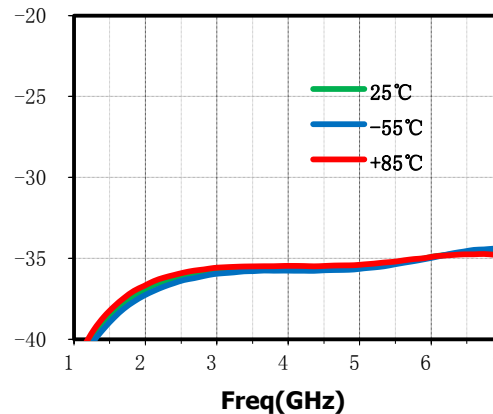


VD=+5V, IDQ=50mA

Small Signal Gain(dB) vs. Temperature



Reverse Isolation(dB) vs. Temperature



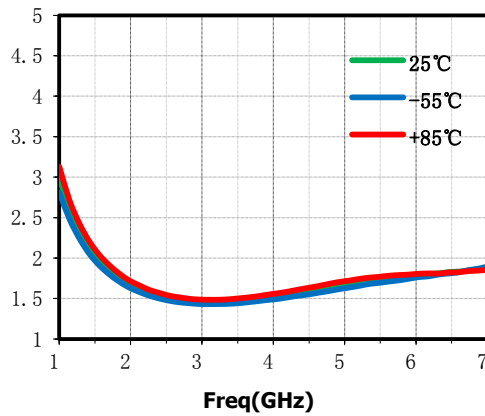
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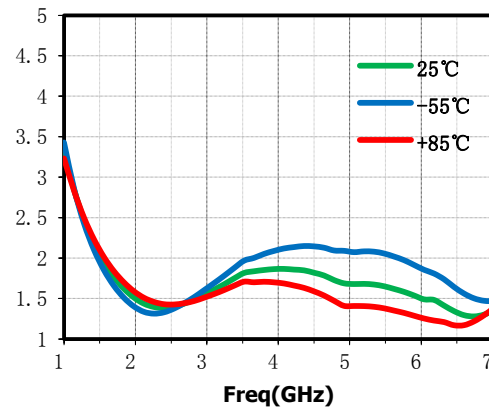
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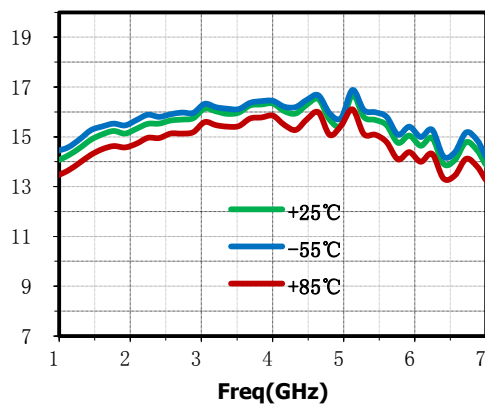
Input VSWR(:1) vs. Temperature



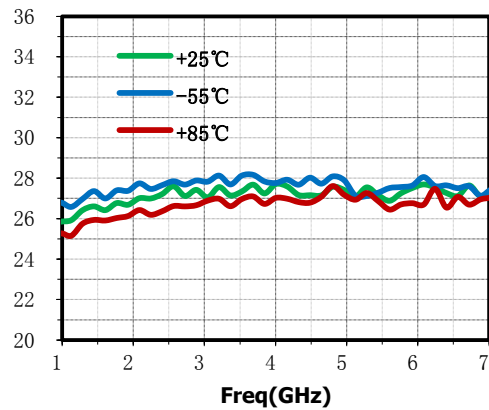
Output VSWR(:1) vs. Temperature



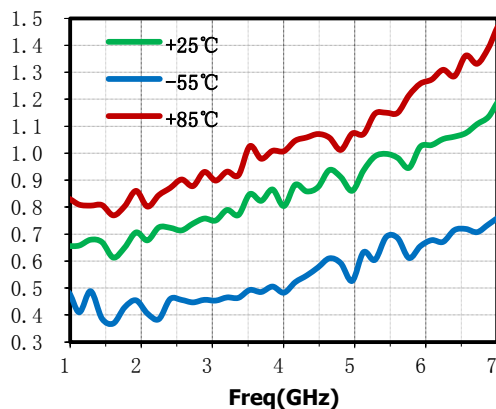
OP₁(dBm) vs. Temperature



OIP₃(dBm) vs. Temperature



Noise Figure(dB) vs. Temperature



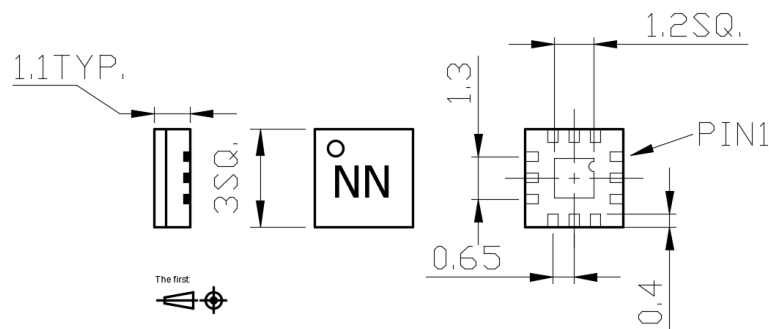
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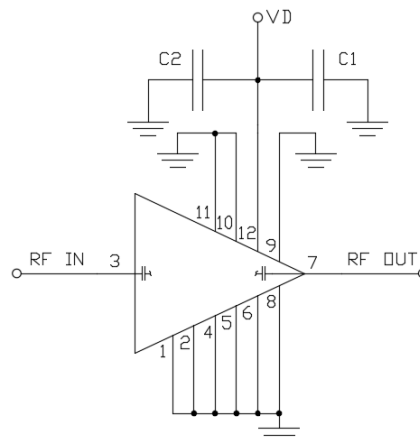
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Outline Drawing

(All dimensions in mm)



Assembly Diagram



Component list

Reference Des.	Value	Part Number	Manuf.	Size
C1	0.01 μ F	—	ANY	0402
C2	2.2 μ F	—	ANY	0402

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 \pm 5 degree environment before soldering. 3. NO Hot-Air Gun. 4. GaAs MMIC devices are susceptible to damage from Electrostatic Discharge. Proper precautions should be observed during handling, assembly and test. 5. Unintegrated DC-isolation capacitors at input and output ports of radio frequency.