SAC3078Q3

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
- Output P_{-1}dB: 14dBm@5GHz
- Package Size: 3mm×3mm×1.1mm

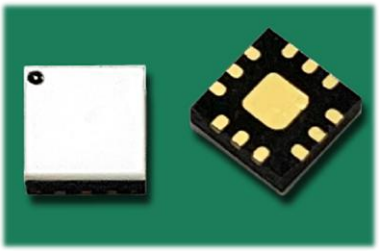
Typical Applications

- Radar and ECM
- C band Low Noise Amplifier

General Description

SAC3078Q3 is a GaAs MMIC Low Noise Amplifier die, which was packaged in shell of QFN. The sides of a shell are 3mm. The device operates from 2GHz to 6GHz.
The device can provide 26dB gain, 14dBm Output P_{-1}dB, less than 1.1dB noise figure, while requiring 60mA from a +5V supply.

Picture



Electrical Performance (T_A=25℃, V_D=+5V, I_D=60mA, Z_0=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_{-1}dB)	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, △f=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		

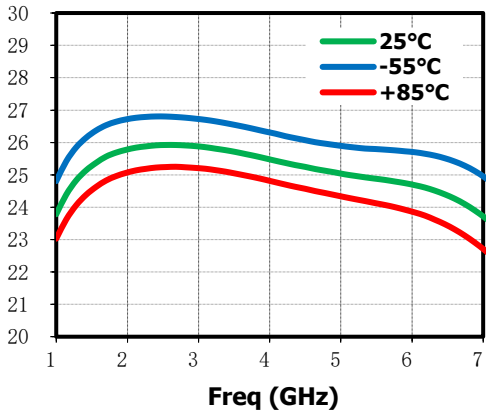
RoHS

SuperApex, LLC
2801 Lakeside Drive, Suite 208, Bannockburn, IL 60015, USA
Tel: 1-847-505-8319, 1-847-573-9866
E-mail: sales@superapexco.com
Website: www.superapexco.com

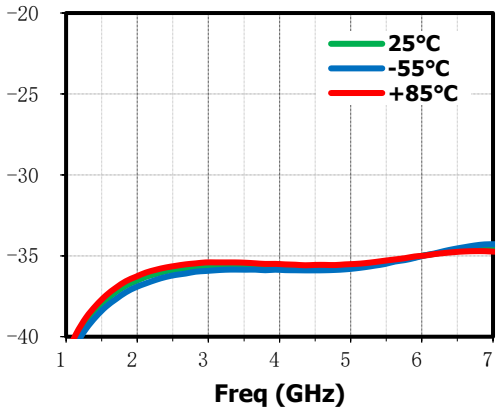
Typical Performance Curve

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

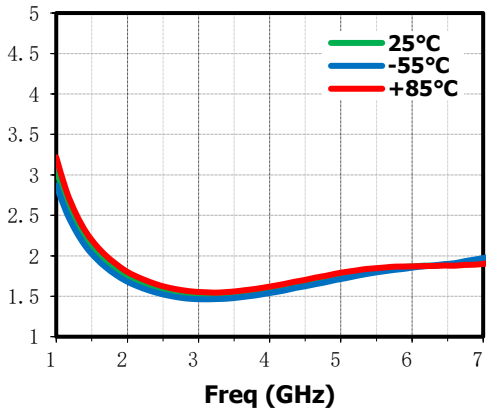
Small Signal Gain (dB) vs. Temperature



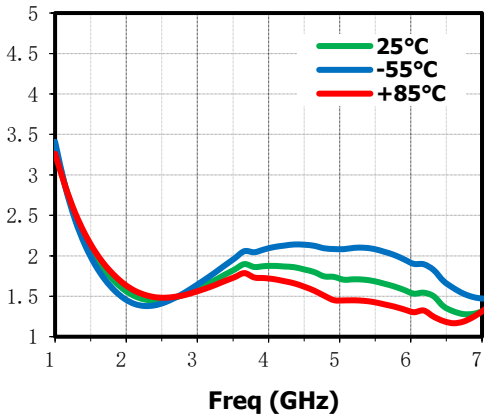
Reverse Isolation (dB) vs. Temperature



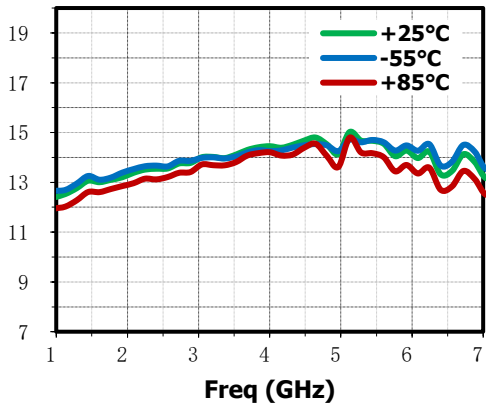
Input VSWR (:1) vs. Temperature



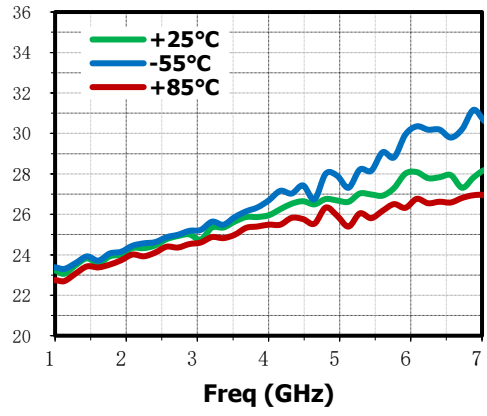
Output VSWR (:1) vs. Temperature



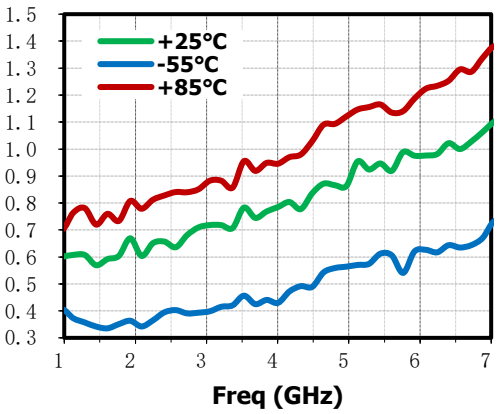
OP$_{-1}$dB (dBm) vs. Temperature



OIP$_3$ (dBm) vs. Temperature

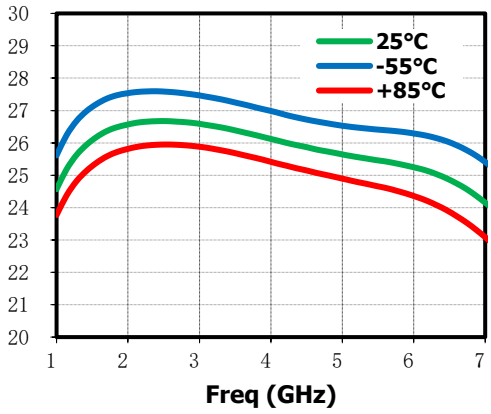


Noise Figure (dB) vs. Temperature

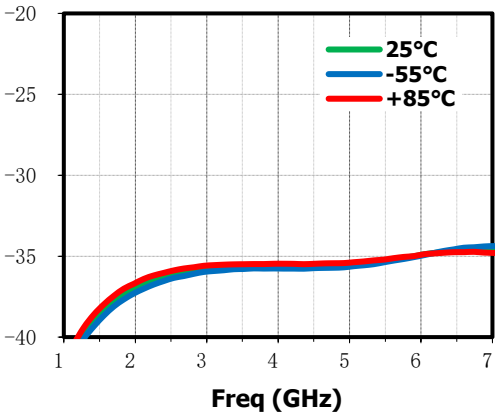


V_D=+5V, I_{DQ}=50mA

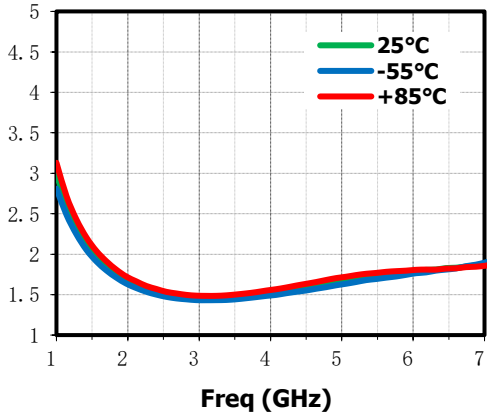
Small Signal Gain (dB) vs. Temperature



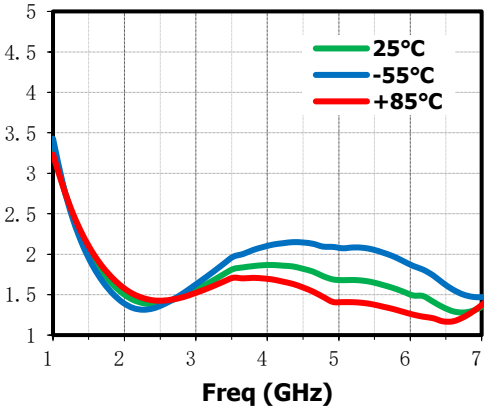
Reverse Isolation (dB) vs. Temperature



Input VSWR (:1) vs. Temperature



Output VSWR (:1) vs. Temperature



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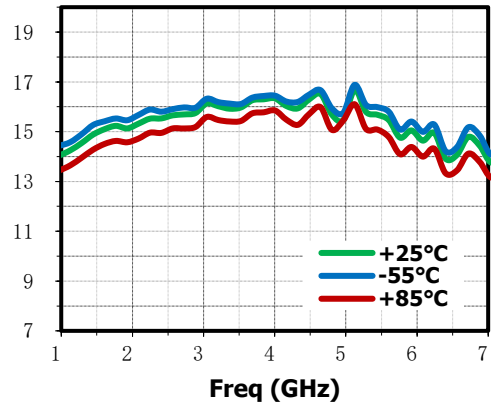
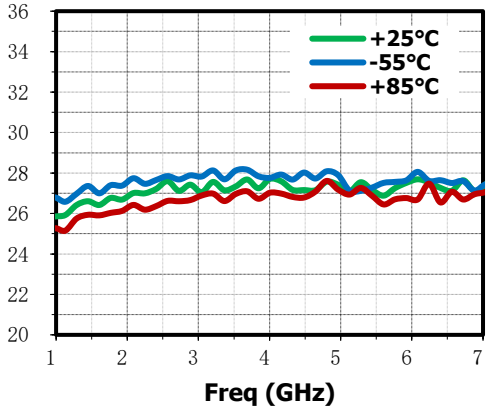
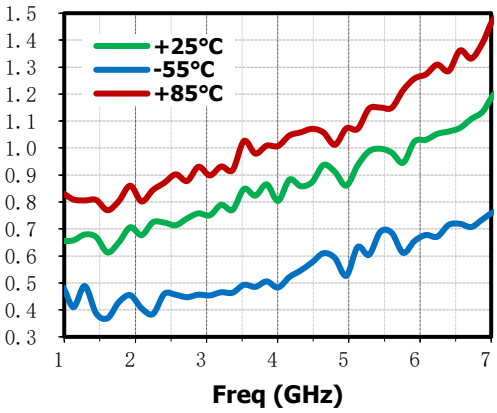
$OP_{-1}dB$ (dBm) vs. Temperature



OIP_3 (dBm) vs. Temperature

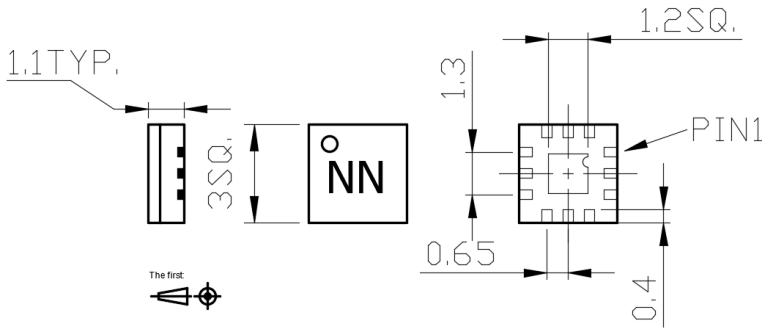


Noise Figure (dB) vs. Temperature

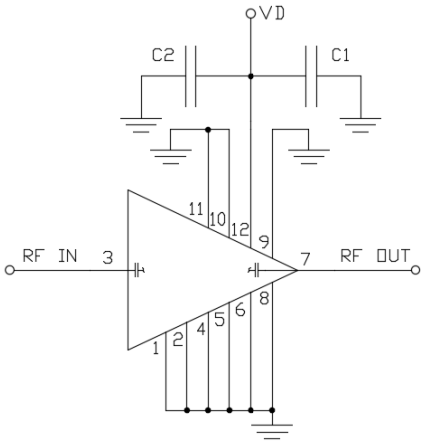


Outline Drawing

(All dimensions in mm)



Assembly Diagram



Component list

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

Attention:

1. The moisture resistant grade of products is 2A, the storage environment ≤30°C/60% RH, and 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.
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.

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