SAC3084Q3

GaAs MMIC Low Noise Amplifier
2~8GHz

Rev 1.1

Features

- Frequency：2~8GHz
- Gain：27dB
- Noise Figure：0.65dB Typ. 0.85dB Max
- Output P_{-1}dB：13dBm
- Power Supply：+5V@40mA
- Package Size：3mmx3mmx1.1mm

Typical Applications

- Wide Band Receiver
- High Density MCM
- EW

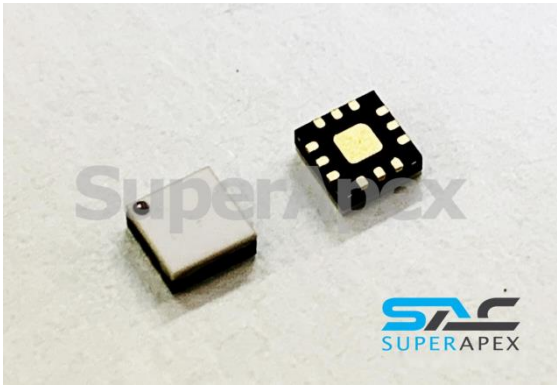
General Description

SAC3084Q3 is a GaAs MMIC Low Noise Amplifier in QFN surface mount package, which operates between in 2~8GHz.

The amplifier can provide 27dB of gain, 13dBm of Output P_{-1}dB and 0.65dB noise figure and from a 40mA supply current.

SAC3084Q3 is assembled in a 3mm x 3mm QFN plastic package.

Picture



Electrical Performance (T_A=25℃, V_D=+5V,I_D=40mA,Z_0=50Ω)

Parameter	Min.	Typ.	Max.	Units
Frequency Range		2~8		GHz
Gain	25	27	30	dB
Gain Flatness	—	±1	±1.5	dB
Input VSWR/ Output VSWR	—	1.5	2	:1
Noise Figure	—	0.65	0.85	dB
Reverse Isolation	—	-40	—	dB
Output P_{-1}dB	12	13	—	dBm
Output IP_3	—	27	—	dBm
Supply Current(I_D)	—	40	45	mA

Absolute Maximum Ratings

Maximum Input Power	+13dBm	Operating Temperature	-55℃~+85℃
Channel Temperature	+150℃	Storage Temperature	-65℃~+150℃
Supply Voltage	+7V		

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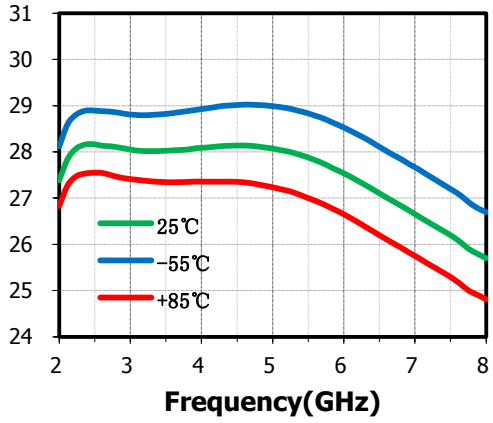
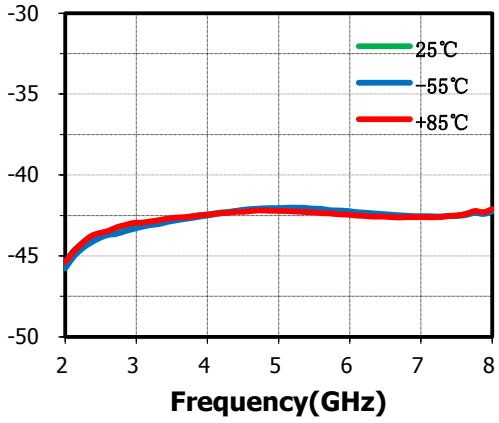
Typical Performance Curve

V_D=+5V,I_{DQ}=40mA, The following curves are taken from SAC3084Q3 evaluation board. De-embedding operation has been implemented.

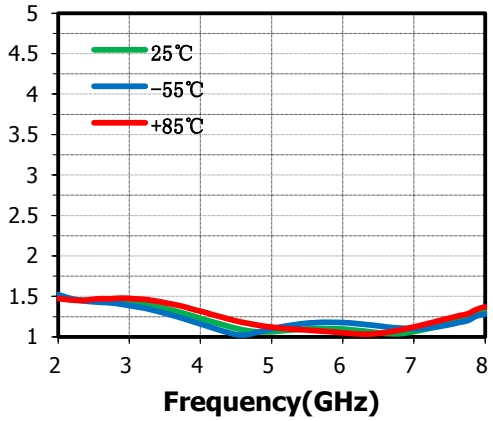
Small Signal Gain(dB) vs.Temperature



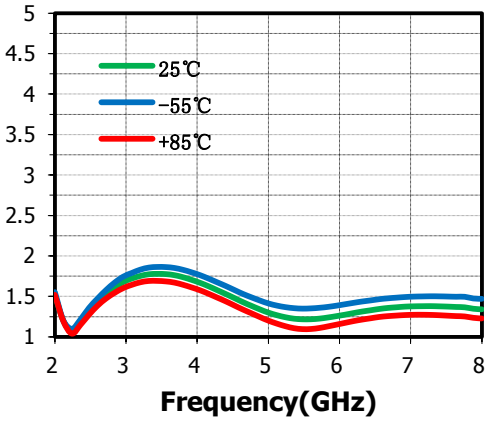
Reverse Isolation(dB) vs.Temperature



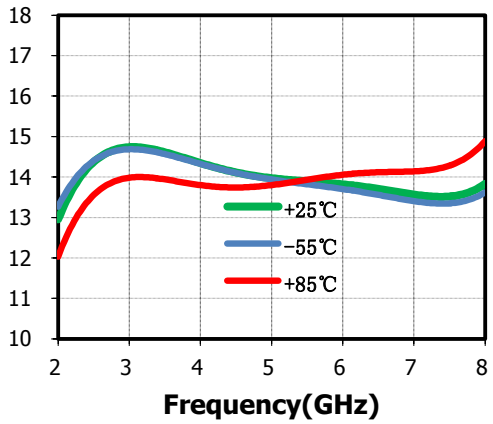
Input VSWR(:1) vs.Temperature



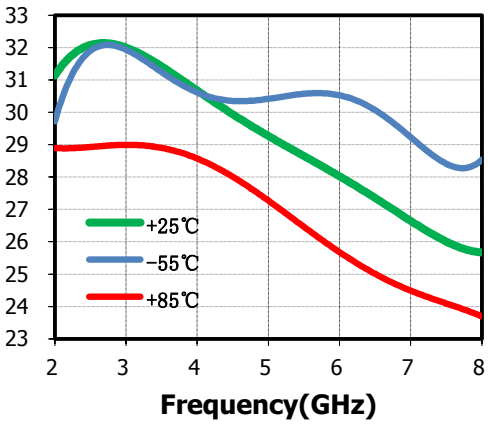
Output VSWR(:1) vs.Temperature



Output P-1dB(dBm) vs.Temperature



Output IP3(dBm) vs.Temperature



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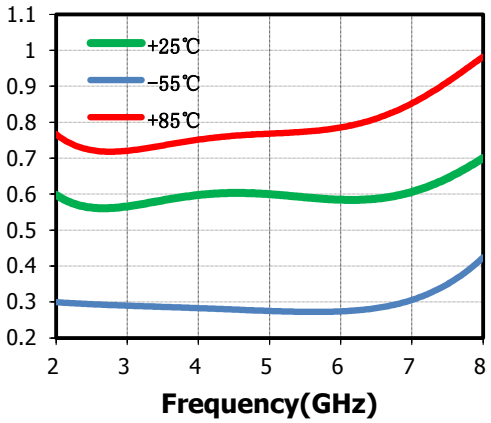
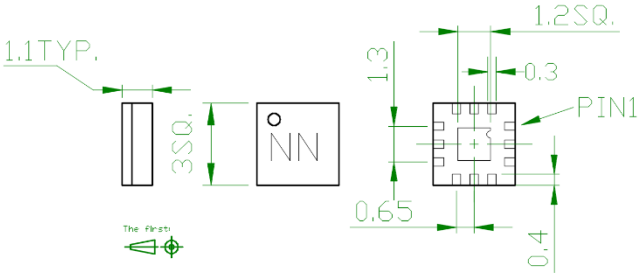
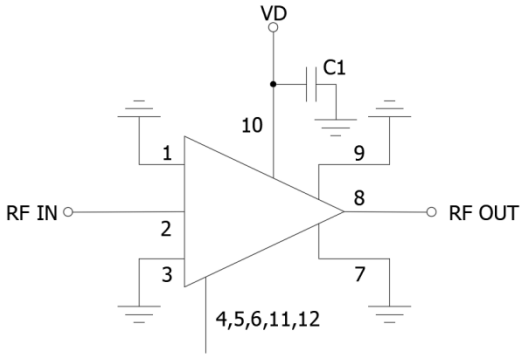
Noise Figure(dB) vs.Temperature



Outline Drawing
(All dimensions in mm)



Assembly Diagram



Pin Function

Pin No.	Func.	Pin No.	Func.
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	NC or Connect to ground	10	VD
5	NC or Connect to ground	11	NC or Connect to ground
6	NC or Connect to ground	12	NC or Connect to ground

Components List

Reference Des.	Value	Part Number	Manuf.
C1	1μF	C1005X5RC105KT	TDK

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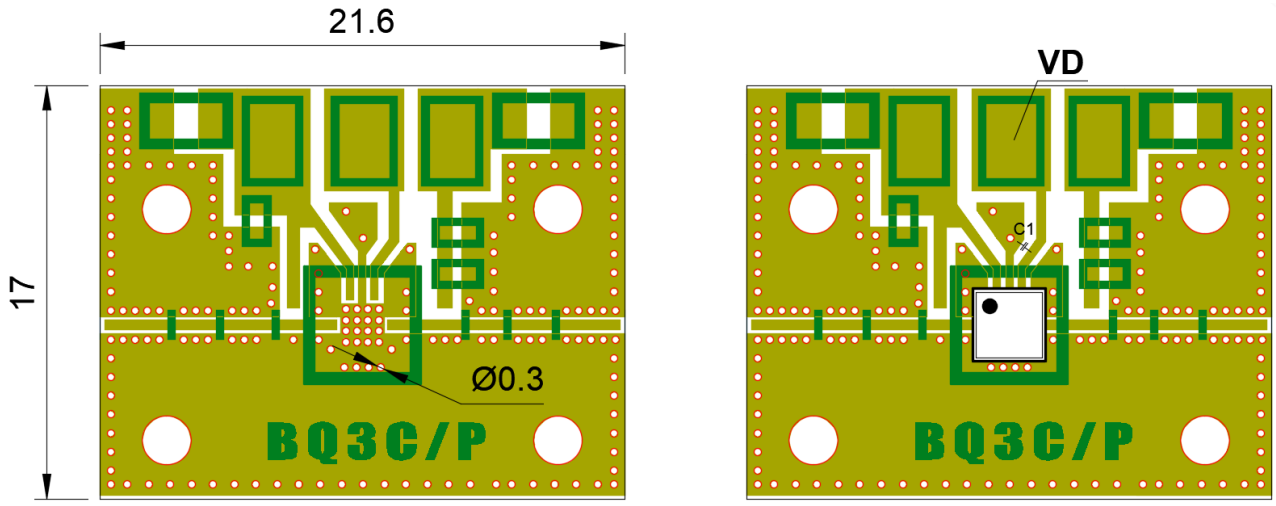
SAC3084Q3 Evaluation Board



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 Ω characteristic impedance.

Attention:

1. The moisture resistant grade of products is 2A, the storage environment ≤30° 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.