

SAC3084QP3

GaAs MMIC Low Noise Amplifier
2~8GHz

Rev 1.0

Features

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

Typical Applications

- Wide Band Receiver
- High Density MCM
- EW

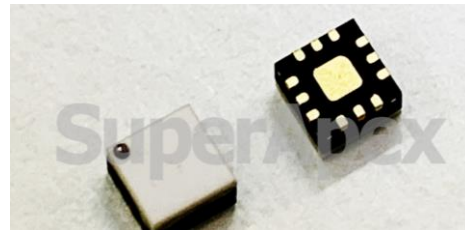
General Description

SAC3084QP3 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_{1dB} and 0.65dB noise figure and from a 40mA supply current.

SAC3084QP3 is assembled in a 3mm x 3mm QFN plastic package.

Picture



Electrical Performance (T_A=25°C, V_D=+5V, I_D=40mA, Z₀=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 _{1dB}	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°C~+85°C
Channel Temperature	+150°C	Storage Temperature	-65°C~+150°C
Supply Voltage	+7V		

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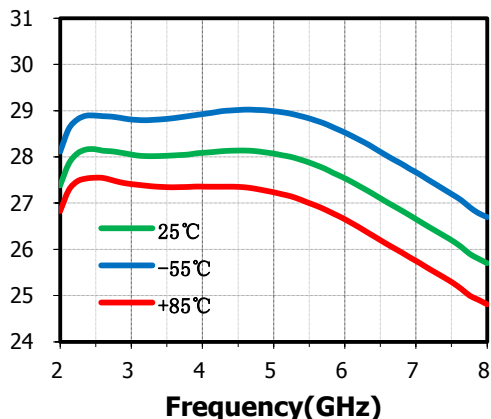
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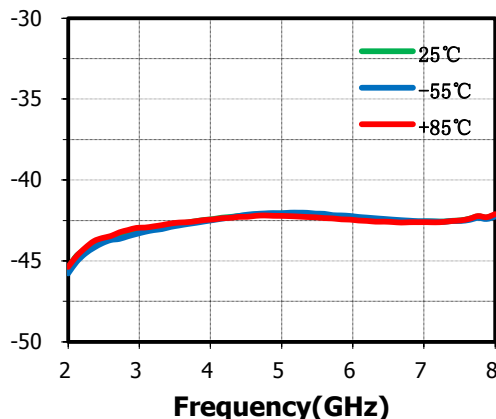
Typical Performance Curve

$V_D=+5V, I_{DQ}=40mA$, The following curves are taken from SAC3084QP3 evaluation board. De-embedding operation has been implemented.

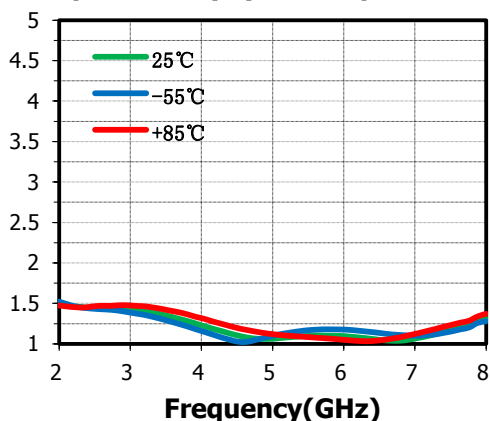
Small Signal Gain(dB) vs.Temperature



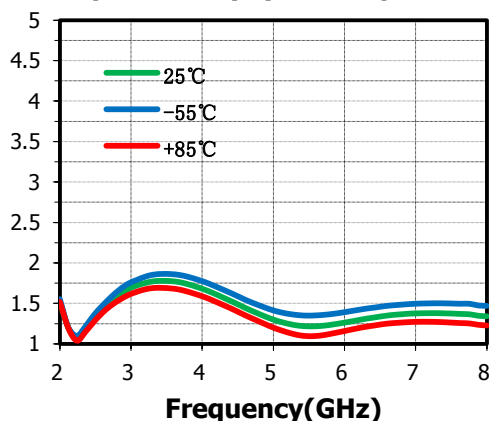
Reverse Isolation(dB) vs.Temperature



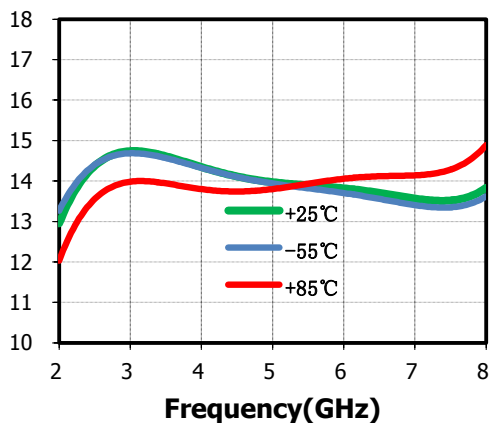
Input VSWR(:1) vs.Temperature



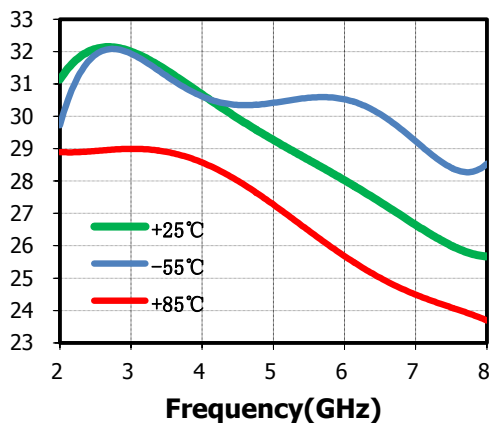
Output VSWR(:1) vs.Temperature



Output P-1dB(dBm) vs.Temperature



Output IP3(dBm) vs.Temperature

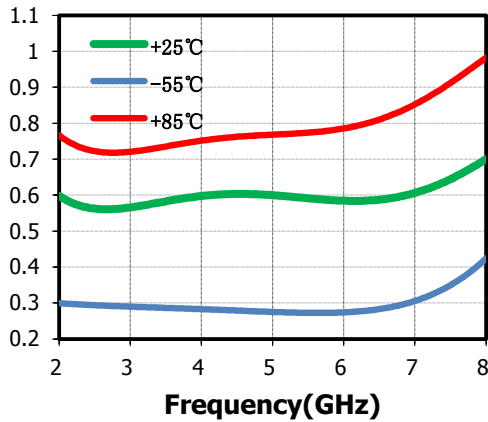


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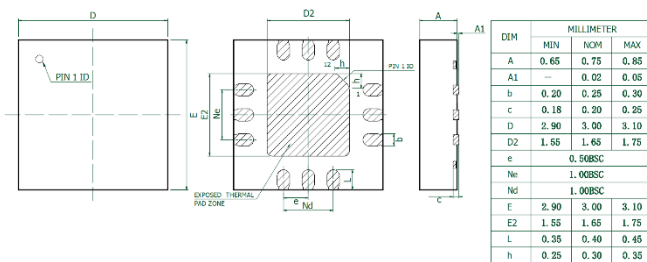
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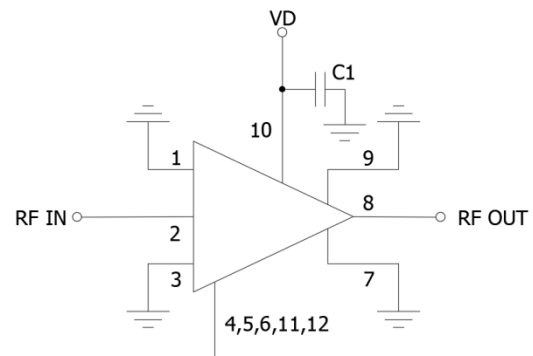
Noise Figure(dB) vs.Temperature



**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

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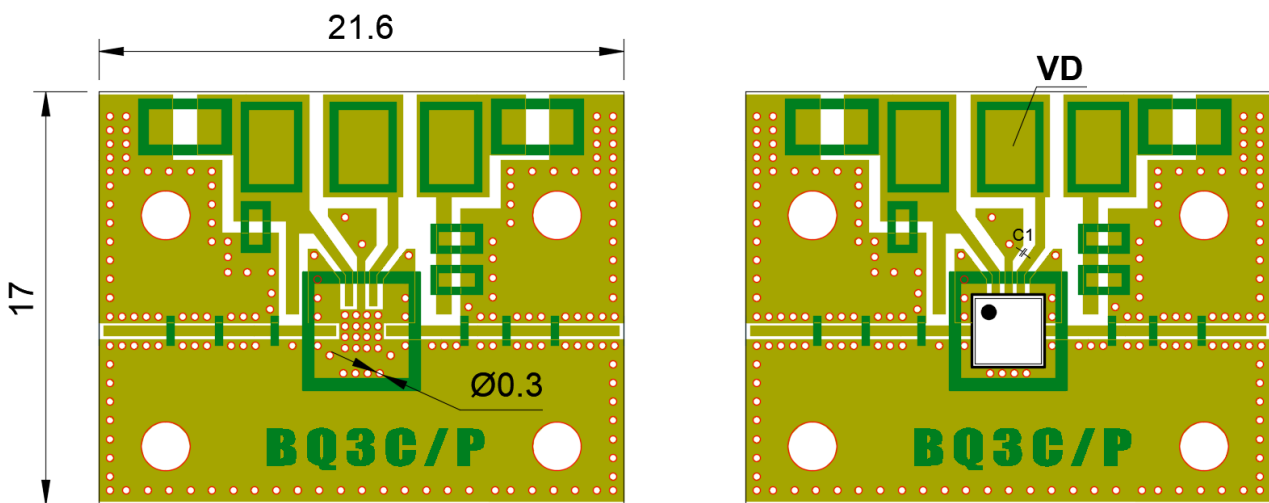
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Components List

Reference Des.	Value	Part Number	Manuf.
C1	1 μ F	C1005X5RC105KT	TDK

SAC3084QP3 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 $\leq 30^{\circ}$ 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.

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