

SAC3932QP3



GaAs MMIC Driver Amplifier
0.05~6GHz 27dBm

Rev 1.1

Features

- Frequency: 0.05~6GHz
- Gain: 15dB
- Output P_{-1dB}: 27dBm
- PAE:35%@3GHz
- Single Power Supply: +8~12V/150mA
- Output IP₃: 37dBm@3GHz
- Package Size: 3mm×3mm×0.75mm

Typical Applications

- SDR
- High-density MCM

General Description

SAC3932QP3 is a GaAs MMIC Driver Amplifier in QFN surface mount package, which operates between in 0.05~6GHz.

SAC3932QP3 can provide 15dB of gain, 27dBm of output P_{-1dB} while requiring 150mA from a +12V supply voltage.

SAC3932QP3 is assembled in a 3mm x 3mm RoHS-compliant low stress injection molded plastic QFN package.

Picture



Electrical Performance (T_A=25°C, V_D=+12V, I_D=150mA, Z₀=50Ω)

Parameter	Min.	Typ.	Max.	Units
Frequency Range	0.05~6			GHz
Small Signal Gain	12	15	20	dB
Gain Flatness	—	±1.5	±2.5	dB
Reverse Isolation	—	-20	—	dB
Input/Output VSWR	—	1.75	2.5	:1
Noise Figure	—	3	4	dB
Output P _{-1dB}	26	27	—	dBm
PAE	—	35*	—	%
Output IP ₃	—	38**	—	dBm
Supply Current(I _D)	—	150	180	mA
Supply Voltage(V _D)	8	—	12	V

* P_{out}=P_{-1dB},f=3GHz

**P_{out}/Tone=13dBm fc=3GHz,Δf=4MHz

Absolute Maximum Ratings

Maximum Input Power	+18dBm , CW 1min	Operating Temperature	-55°C~+85°C
Channel Temperature	150°C	Storage Temperature	-55°C~+150°C
Maximum V _D	12.5V		

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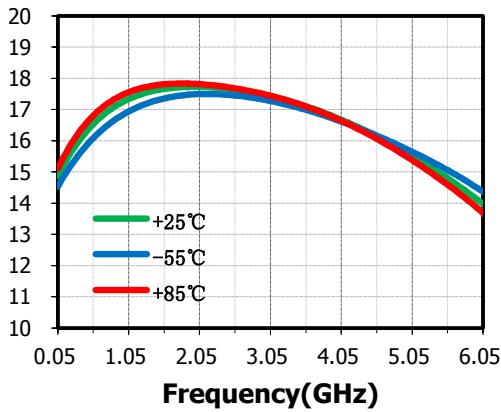
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Typical Performance Curve

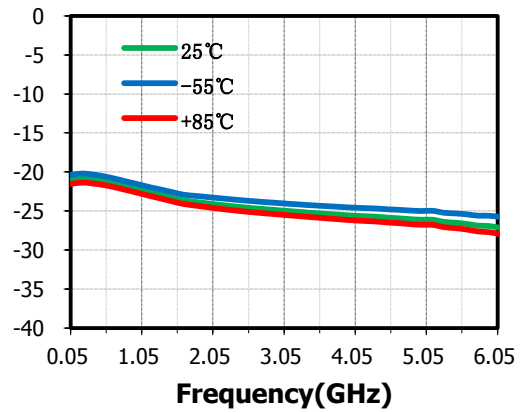
$V_D=+8V$, $I_{D0}=150mA$. The following curves are taken from SAC3932QP3 evaluation board.

No de-embedding operation has been implemented

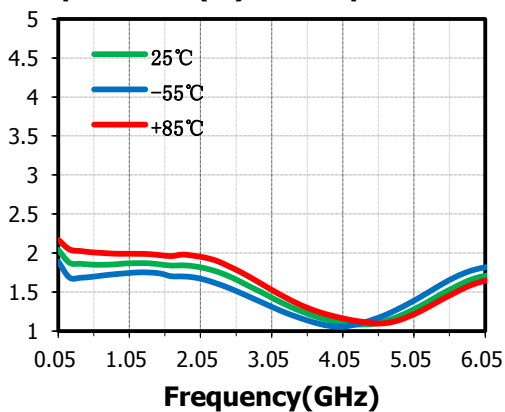
Small Signal Gain(dB) vs.Temperature



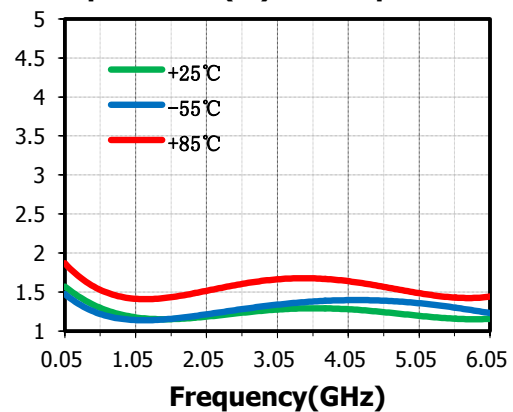
Reverse Isolation(dB) vs.Temperature



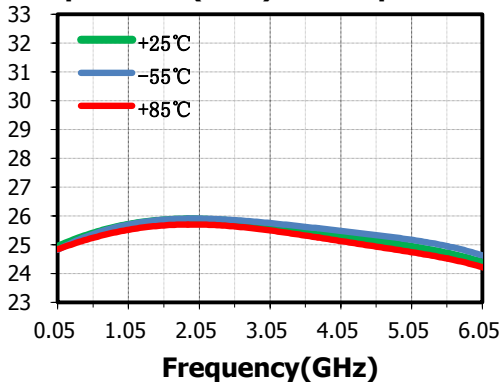
Input VSWR(:1) vs.Temperature



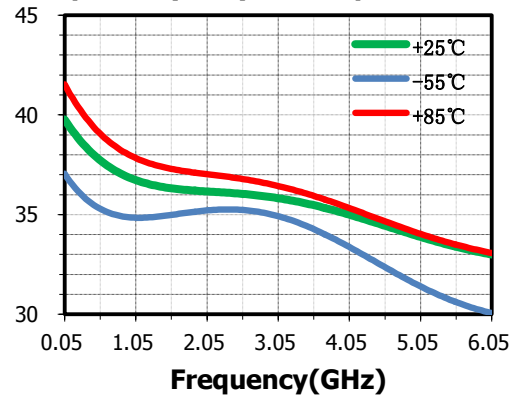
Output VSWR(:1) vs.Temperature



Output P-1dB(dBm) vs.Temperature



Output IP₃(dBm) vs.Temperature



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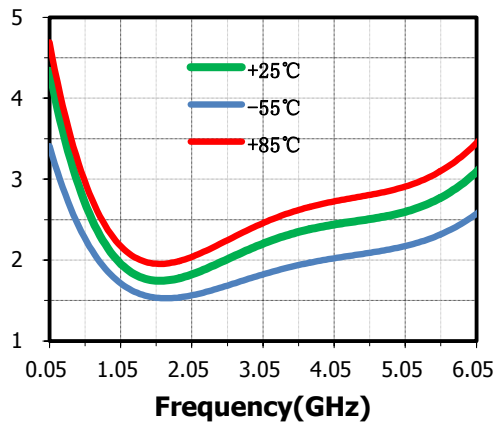
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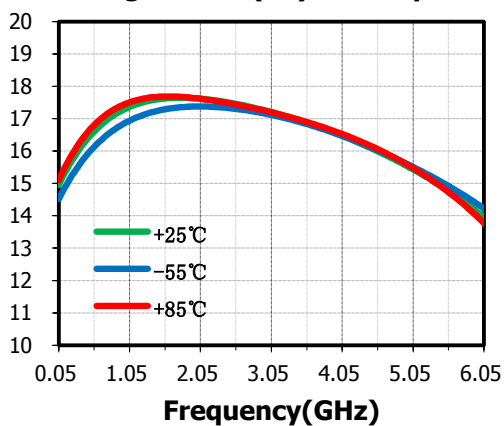
Noise Figure(dB) vs.Temperature



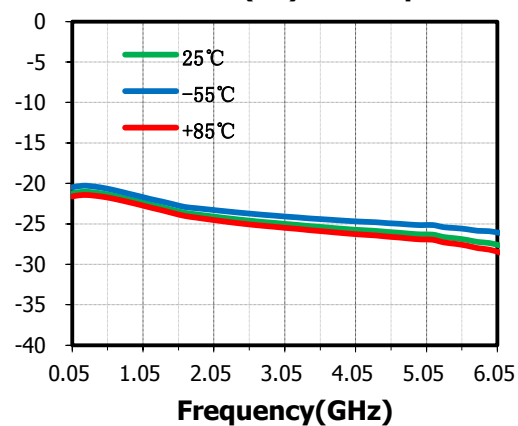
$V_D=+12V$, $I_{D0}=150mA$, The following curves are taken from SAC3932QP3 evaluation board.

No de-embedding operation has been implemented

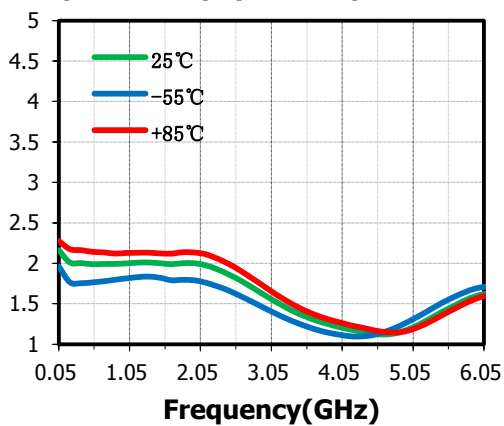
Small Signal Gain(dB) vs.Temperature



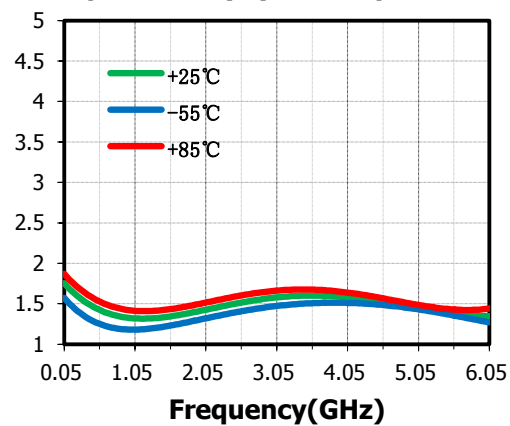
Reverse Isolation(dB) vs.Temperature



Input VSWR(:1) vs.Temperature



Output VSWR(:1) vs.Temperature



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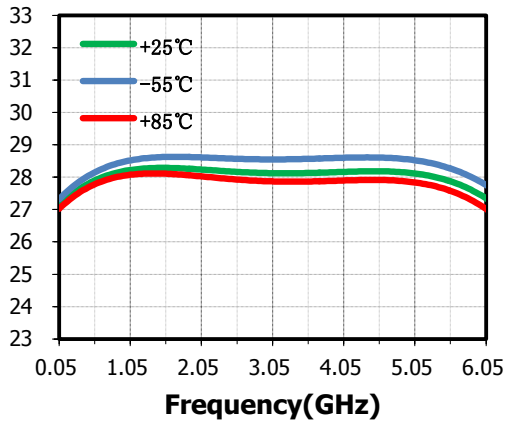
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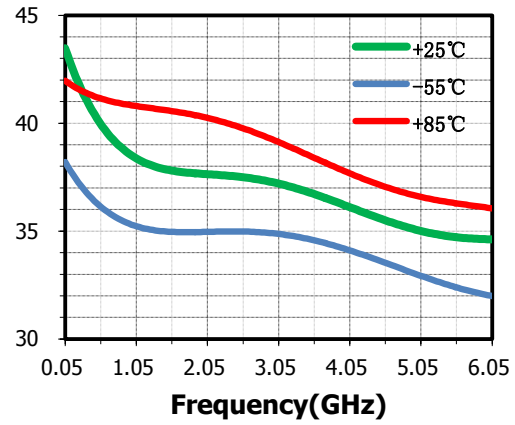
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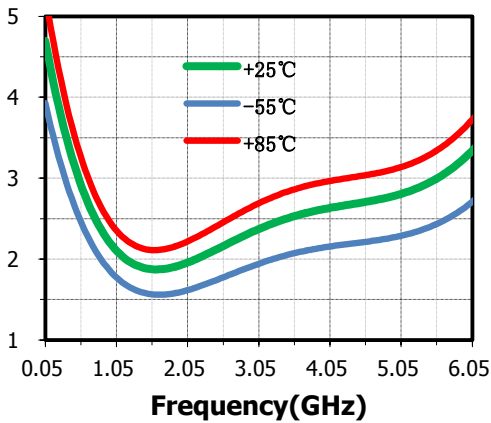
Output P-1dB(dBm) vs.Temperature



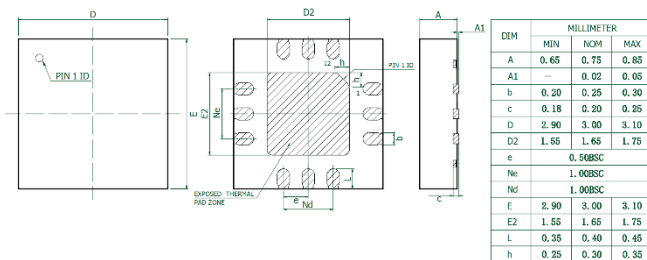
Output IP₃(dBm) vs.Temperature



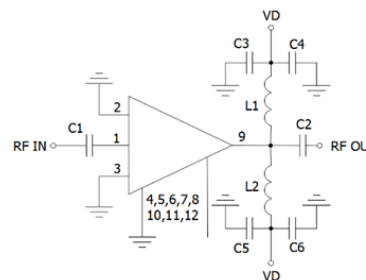
Noise Figure(dB) vs.Temperature



**Outline Drawing
(All dimensions in mm)**



Application Circuit



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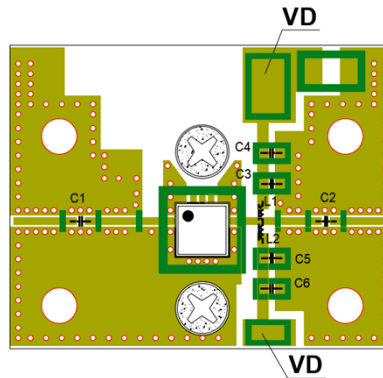
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Pin Function

Pin No.	Description	Pin No.	Description
1	RF input, DC Coupled	7	Connect to ground
2	Connect to ground	8	Connect to ground
3	Connect to ground	9	RF Output,/Bias
4	Connect to ground	10	NC or Connect to ground
5	Connect to ground	11	NC or Connect to ground
6	Connect to ground	12	NC or Connect to ground

SAC3932QP3 Evaluation Board



The 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.

Components List

Reference Des.	Value	Part Number	Manuf.
C1, C2, C3, C5	300pF	GRM1555C1H301JA	Murata
C4, C6	0.01uF	GRM0336R61A103KE	Murata
C4, C6	2.2uF	-	-
L1, L2	-	MMZ1005A222	TDK

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.

Revision History

Revision	Date	Comment
1.0	Jul 13,2020	First Release
1.1	Mar 31,2021	Change package from QFN(Air cavity)to RoHS-compliant low stress injection molded plastic QFN package

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