

SAC3109Q6



GaAs MMIC Power Amplifier
5GHz~6GHz 37dBm

Rev2.2

Features

- Frequency: 5GHz~6GHz
- Gain: 34dB
- Output P_{-1dB}: 35dBm@8V
- Supply Voltage: +5~8V
- Power-Added Efficiency: 40%@8V
- Packaged Size: 6mm × 6mm × 1.1mm

Typical Applications

- Microwave radio including point to point communication
- Telecommunication
- Weather radar
- Optical communication
- Test instrumentation
- SatCom
- VSAT
- Military and Aerospace

General Description

SAC3109Q6 is a C-band GaAs MMIC power amplifier. SAC3109Q6 provides 34 dB of gain, and +35 dBm of output power for 1dB compression and 40% PAE from a +8V supply.

Electrical Performance (T_A=25°C, V_D=+8V, I_D=1.1A, Z₀=50Ω)

Parameter	Min.	Typ.	Max.	Units
Frequency Range	5 ~ 6			GHz
Small Signal Gain	25	34	—	dB
Small Signal Gain Flatness	—	±1.5	—	dB
Reverse Isolation	—	-40	—	dB
Input Return Loss	—	-22	—	dB
Power-Added Efficiency	—	40	—	%
Output Power for 1 dB Compression (OP _{-1dB})	—	35	35.5	dBm
Drain Voltage(V _D)	—	8	—	V
Supply Current(I _D)	—	1.5	2.2	A

Absolute Maximum Ratings

Maximum Input Power	+20dBm	Operating Temperature	-55°C~+85°C
Channel Temperature	+150°C	Storage Temperature	-65°C~+150°C
Maximum V _D	+9V	Maximum V _G	-1.2V

SuperApex Corporation

Address: 1580 S. Milwaukee, Ave. Suite 405, Libertyville, IL 60048, USA
Tel: 1-847-573-9866, 1-847-505-8319
E-mail: sales@superapexco.com
Website: www.superapexco.com

SAC3109Q6

GaAs MMIC Power Amplifier
5GHz~6GHz 37dBm

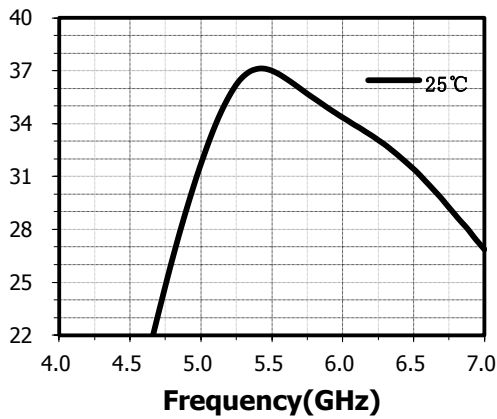
Rev2.2

Typical Performance Curve

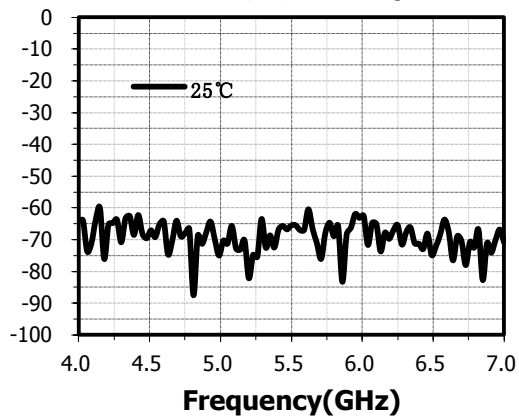
S-parameters

$V_D=8V$ $I_{DQ}=1.1A$ $T_A=25^\circ C$

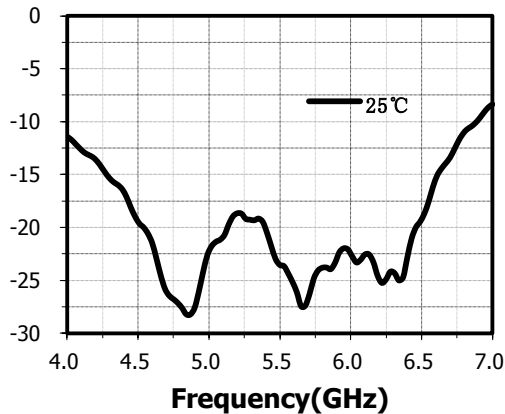
Small Signal Gain(dB) vs. Temperature



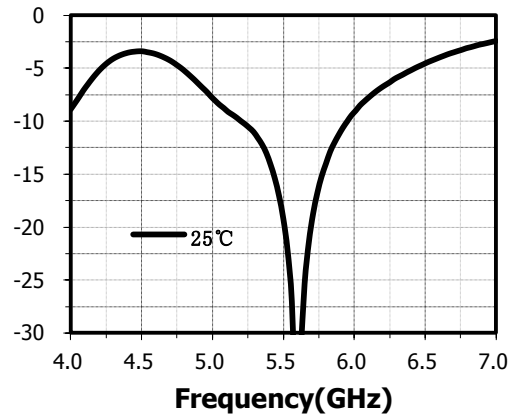
Reverse Isolation(dB) vs. Temperature



Input Return Loss(dB) vs. Temperature



Output Return Loss(dB) vs. Temperature

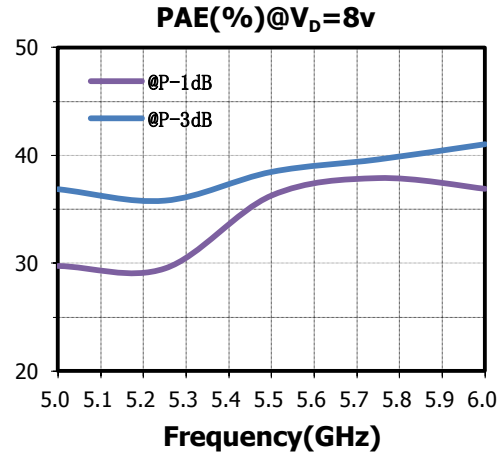
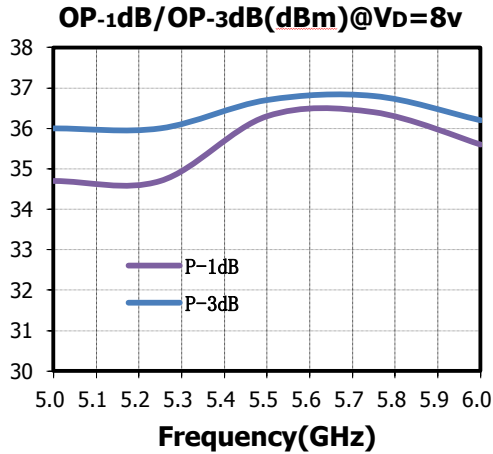


SAC3109Q6

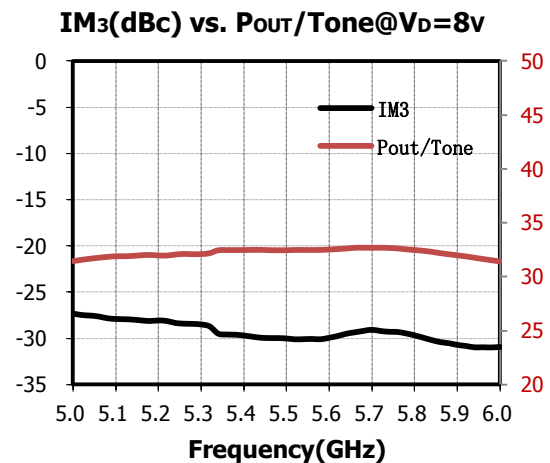
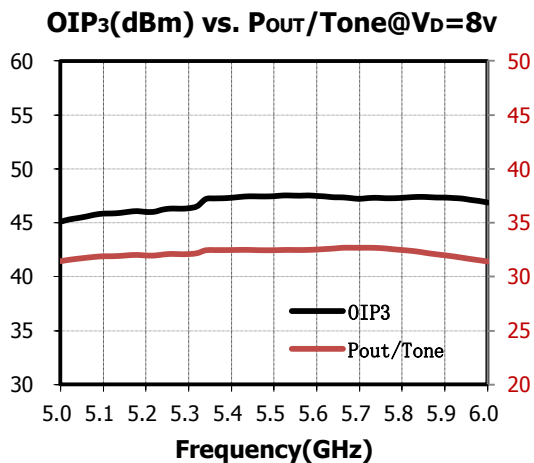
GaAs MMIC Power Amplifier
5GHz~6GHz 37dBm

Rev2.2

S-parameters $V_D=8V$ $I_{DQ}=1.1A$ $T_A=25^\circ C$



OIP₃ & IM₃ $V_D=8V$ $I_{DQ}=1.1A$ $T_A=25^\circ C$

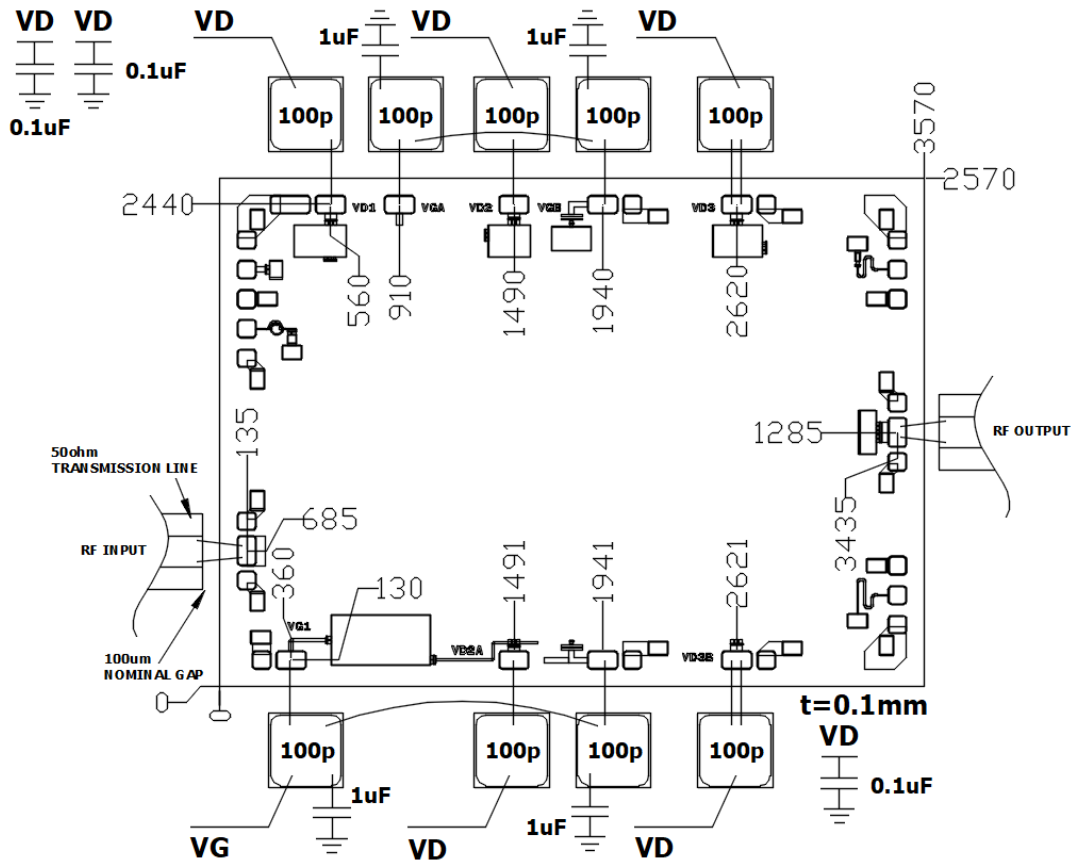


SAC3109Q6

GaAs MMIC Power Amplifier
5GHz~6GHz 37dBm

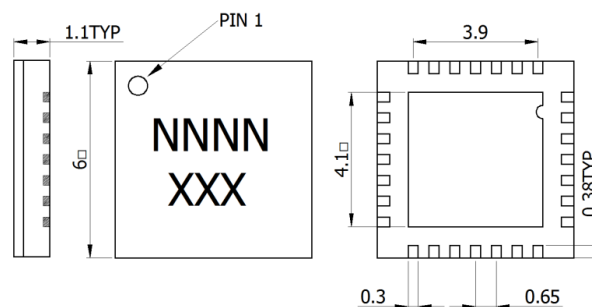
Rev2.2

Bare die physical layout



QFN 6x6 Outline Drawing

Lead-Free 6mm 28-Lead PQFN (all dimensions in mm)



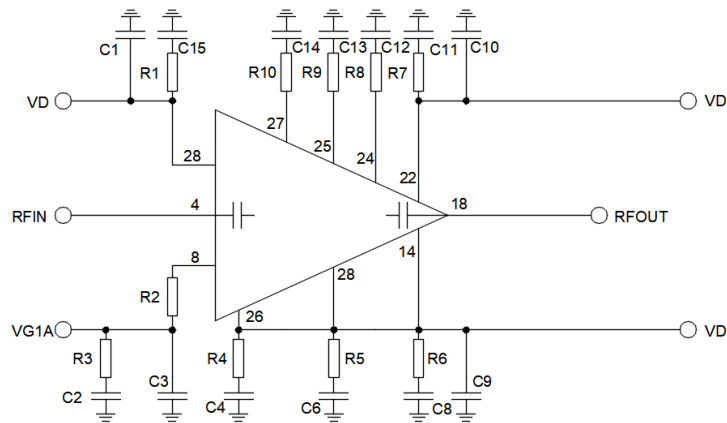
SAC3109Q6

GaAs MMIC Power Amplifier
5GHz~6GHz 37dBm

Rev2.2

PIN No.	Func.	PIN No.	Func.	PIN No.	Func.	PIN No.	Func.
1	Connect to GND	10	NC	19	Connect to GND	28	VD1A
2	Connect to GND	11	NC	20	Connect to GND		
3	Connect to GND	12	NC	21	Connect to GND		
4	RF IN	13	NC	22	VD3A		
5	Connect to GND	14	VD3B	23	NC		
6	Connect to GND	15	Connect to GND	24	VG Bias		
7	Connect to GND	16	Connect to GND	25	VG Bias		
8	VG1A	17	Connect to GND	26	VD2		
9	NC	18	RF OUT	27	VG Bias		

Part No.	Value	Part No.	Value	Part No.	Value
R1	2.2R	R10	2.2R	C9	10uF
R2	2.2R	C1	10uF	C10	10uF
R3	10R	C2	0.68uF	C11	0.68uF
R4	2.2R	C3	10uF	C12	0.68uF
R5	2.2R	C4	0.68uF	C13	0.68uF
R6	2.2R	C6	0.68uF	C14	0.68uF
R7	2.2R	C8	0.68uF	C15	0.68uF
R8	2.2R				
R9	2.2R				



Attention:

1. The moisture resistant grade of products is 2A, the storage environment $\leq 30^{\circ} \text{C}/60\% \text{RH}$, 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.