SAC3609

GaAs Bi-directional Amplifier
0.7GHz~5GHz

Rev 2.1

Features

- Frequency：0.7~5GHz
- Gain：21dB
- OutputP_{-1}dB：16dBm
- Supply Voltage：+5V@120mA
- Die Size：2.5mm×2.1mm×0.1mm

Typical Applications

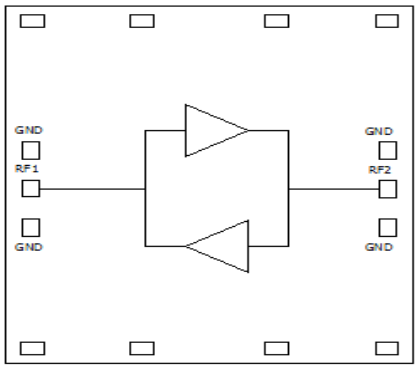
- EW
- Military Radar and Weather Radar
- SATCOM
- Beamforming
- Phase Shift

General Description

SAC3609 is a bi-directional MMIC amplifier which operates between 0.7GHz to 5GHz. It is fabricated using GaAs process. It has bi-directional amplification function, and can be switched between forward/reverse amplification by external digital control signal. It provides 21dB gain and 16dBm OutputP_{-1}dB by consuming 120mA current.

The chip is back-metalized to ensure better grounding. It can be die-mounted with AuSn eutectic preform or with electrically conductive epoxy.

Functional Diagram



Electrical Performance

(T_A=25℃, V_D=+5V,I_D=120mA,Z_O=50Ω)

Parameter	Min.	Typ.	Max.	Units
Frequency		0.7~5		GHz
Gain	—	21	—	dB
Gain Flatness	—	1	—	dB
Reserve Isolation	—	-37	—	dB
Input VSWR/ Output VSWR	—	1.5	—	： 1
Noise Figure	—	4.5	—	dB
OutputP_{-1}dB	—	16	—	dBm
OutputIP_3	—	26	—	dBm
Supply Current(I_D)	—	120	—	mA

Absolute Maximum Ratings

RF Input Power	18dBm	Control Voltage Range	-5.5~+0.5V
Channel temperature	150℃	Storage Temperature	-65℃~+150℃
Operating Temperature	-55℃~+85℃	ESD protection level（HBM）	Class 1A

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Truth Table

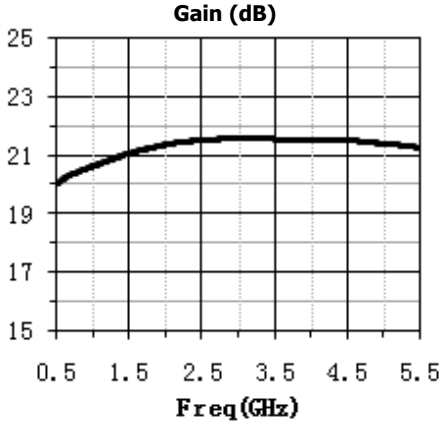
State		Amplification State
Vc	Low	RFC1-RF2 ON
	High	RFC2-RF1 ON

Control Voltage

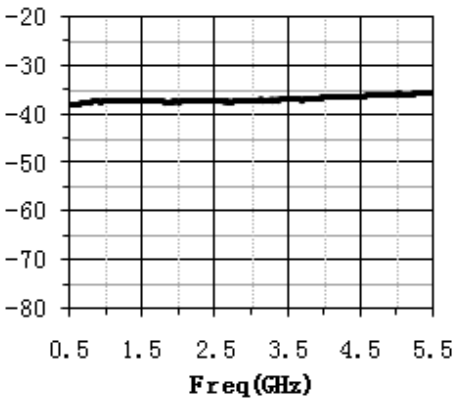
State	Bias Condition
Low	0~ 0.2V
High	3~ +5V

Typical Performance Curve

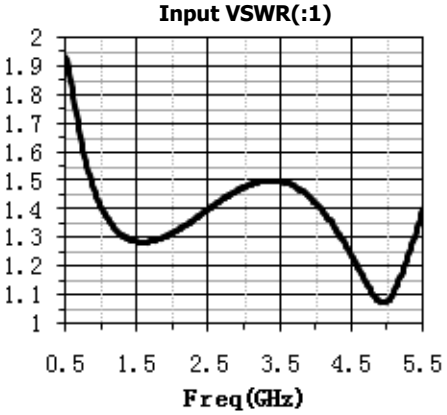
Gain (dB)



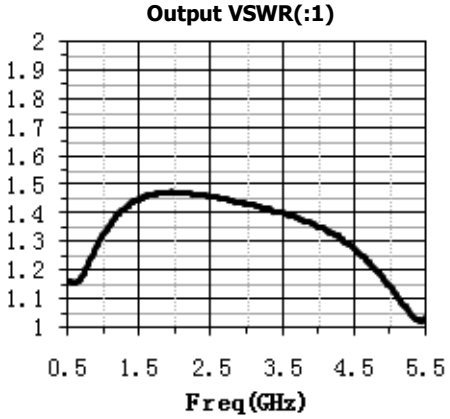
Reverse Isolation (dB)



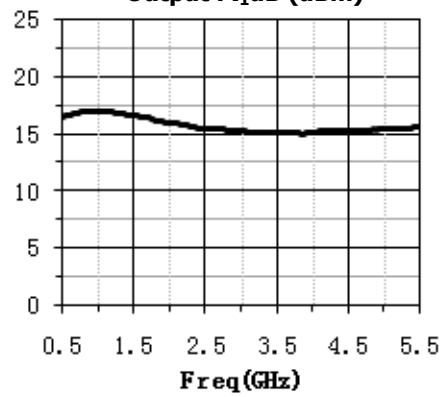
Input VSWR(:1)



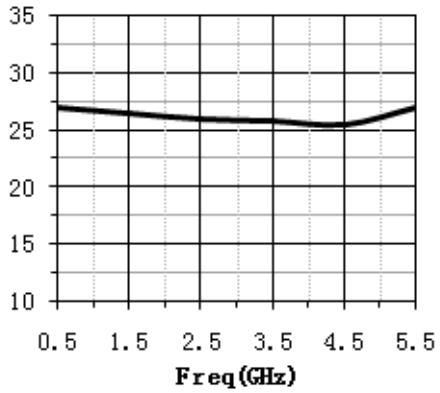
Output VSWR(:1)



Output P_{-1}dB (dBm)



Output IP_3 (dBm)



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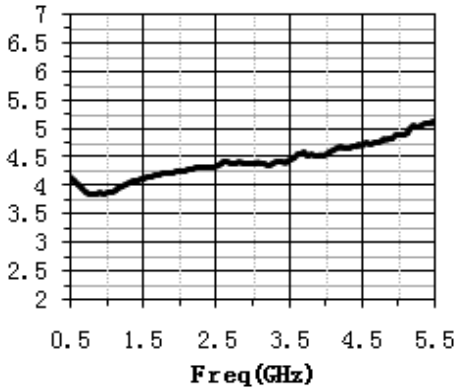
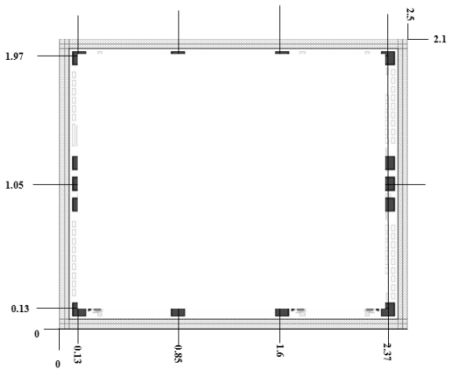
Noise Figure(dB)

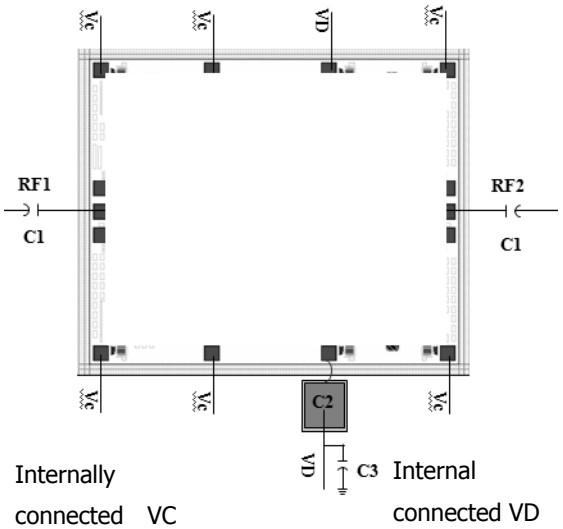


Die Outline

(all dimensions in mm)



Assembly Diagram



Components List

Reference Des.	Value	Part Number	Manuf.	Size
C1	100pF	GRM1555C1H101JZ01D	MURATA	0402
C2	100pF	-	RADVISTA	Chip
C3	10nF	GRM155R71H103KA88D	MURATA	0402

Attention:

GaAs MMIC devices are susceptible to damage from Electrostatic Discharge. Proper precautions should be observed during handling, assembly and test.