

SAC3209AQ3



GaAs MMIC SPST Switch
DC~20GHz

Rev 1.0

Features

- Frequency Range: DC~20GHz
- Reverse Isolation: >50dB@20GHz
- Insertion Loss: 2dB@20GHz
- Reflective
- Packaged: 3mm×3mm×1.2mm

Typical Applications

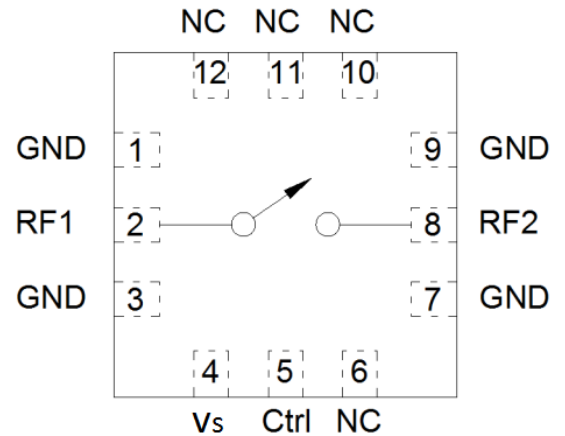
- Radar and ECM
- RF/ Microwave radio
- Military and Space
- Test and Measurement
- Fiber Optics

General Description

SAC3209AQ3 is a broadband reflective GaAs PHEMT single pole single throw switch chip, covering the frequency band DC ~ 20GHz. The chip provides isolation of more than 50dB and insertion loss of less than 1dB in the whole working frequency band. The bias voltage is -4.5V, which is controlled by 0 / + 5V logic. It has excellent switching characteristics and port standing wave characteristics in the working frequency band. It is suitable for microwave hybrid integrated circuits, multi-chip modules and low-power systems.

The switch chip adopts on-chip through-hole metallization process to ensure good grounding. The back of the chip is metallized, which is suitable for eutectic sintering or conductive adhesive bonding process.

Functional Diagram



Electrical Performance

$T_A=25^{\circ}\text{C}$, Control Voltage=0/+5V, 50Ω System

Parameter	Freq.	Min.	Typ.	Max.	Units
Insertion Loss	DC~20GHz	-	-1	-	dB
Isolation	DC~20GHz	-45	-55	-	dB
VSWR RF1, RF2(ON)	DC~20GHz	-	-15	-	dB

Absolute Maximum Ratings

Maximum Input Power	+30dBm	Operating Temperature	-55°C~+85°C
Control Voltage Range	0~5.5V	Storage Temperature	-65°C~+150°C
ESD Sensitivity (HBM)	Class 1A	Channel Temperature	150°C

Power Supply

V_s	I_s
-4.5~-4.7V	3mA

Logic Voltage

State	Bias
LOW	0~0.2V
HIGH	3.5~5.5V

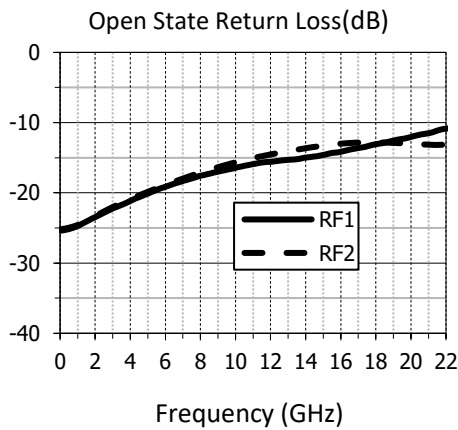
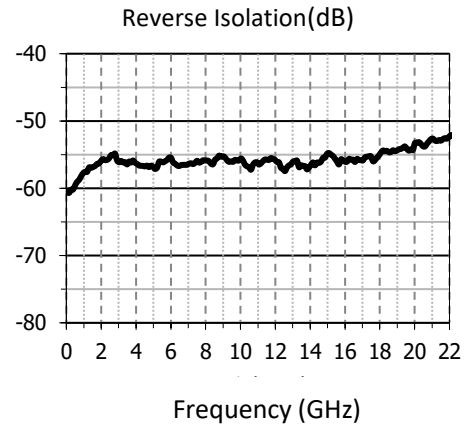
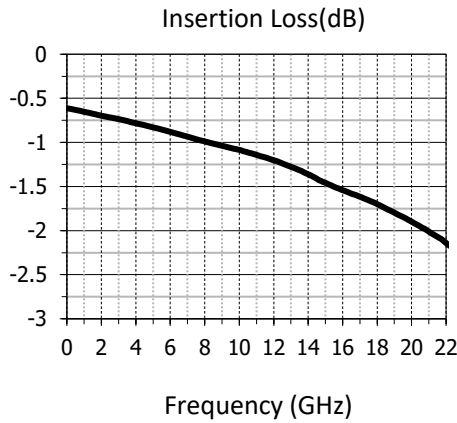
Truth Table

Control Input	Signal Path State
Ctrl	RF1-RF2
LOW	ON
HIGH	OFF

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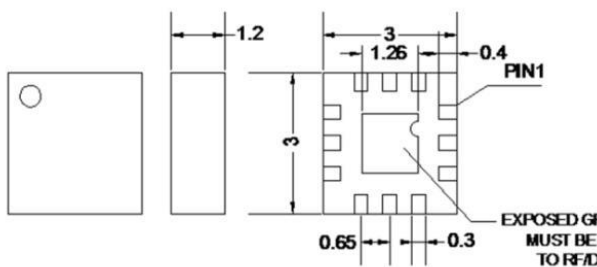
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Typical Performance Curve

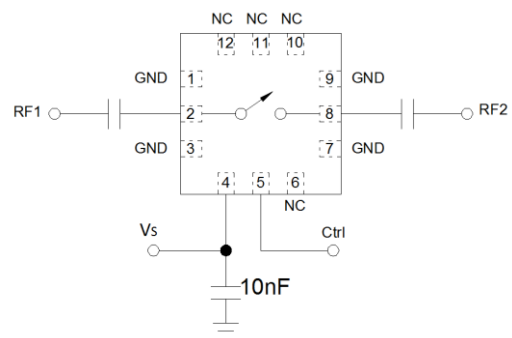


Die Outline

(All dimensions in μm)



Assembly Diagram



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.
3. The device is sensitive to static electricity. Pay attention to anti-static during storage and use.
4. RF port requires additional DC isolation capacitor.