

# SAC3209A

GaAs MMIC SPST Switch  
DC~20GHz

Rev 1.3

## Features

- Frequency Range: DC~20GHz
- Isolation: >50dB@20GHz
- Insertion Loss: 2dB@20GHz
- Nanosecond Switch
- Die Size: 1.21mm×0.65mm×0.1mm

## Typical Applications

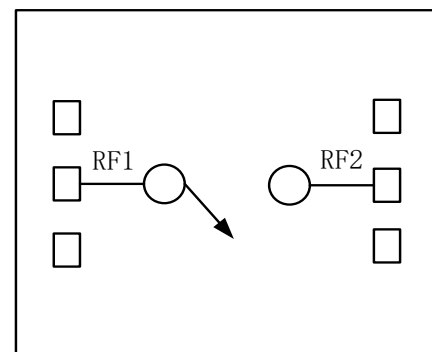
- Radar and ECM
- RF/ Microwave radio
- Military and Space
- Test and Measurement
- Fiber Optics

## General Description

SAC3209A is a general purpose broadband high isolation reflective GaAs pHEMT SPST switch in bare die. The switch offers over 50dB isolation and less than 2dB insertion loss over operation frequency. Its fast switching and compact size make this reflective SPST ideal for many critical applications. The switch operates using complementary positive control voltage logic lines of 0/+5V and the bias voltage is -4.5V.

The chip offers full passivation for increased reliability and moisture protection. This amplifier is the perfect alternative to higher cost hybrid amplifiers.

## Functional Diagram



## Electrical Performance ( $T_A=+25^{\circ}\text{C}$ , Control Voltage = 0/+5V, $Z_0=50\Omega$ )

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

## Absolute Maximum Ratings

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

## Bias Voltage & Current

$V_s$	$I_s$
-4.5~-4.7V	3mA

## SuperApex, LLC

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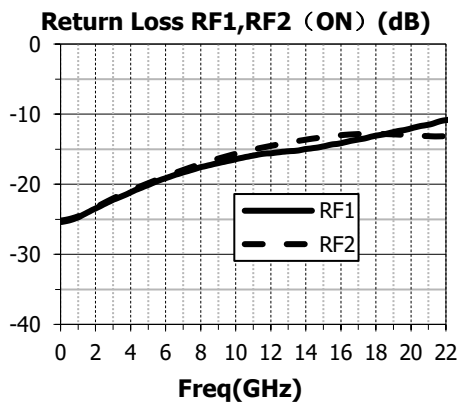
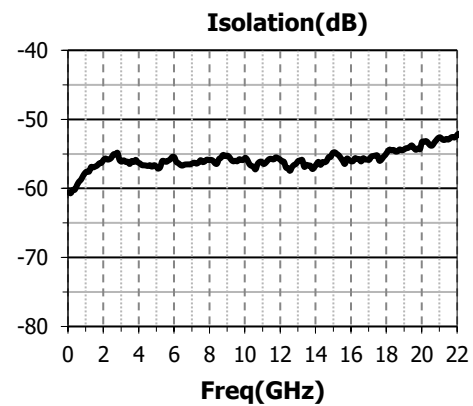
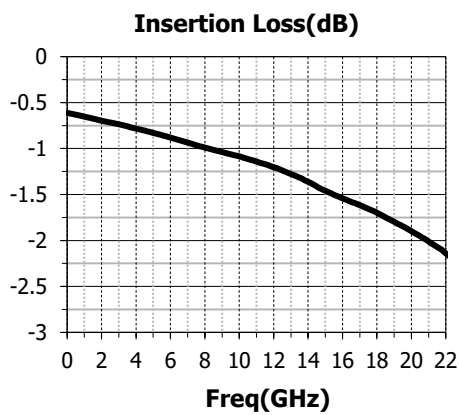
## Control Voltages

State	Bias Condition
Low	0~0.2V
High	3.5~5.5V

## Truth Table

Control Input	Switch State
Ctrl	RF1-RF2
Low	ON
High	OFF

## Typical Performance Curve



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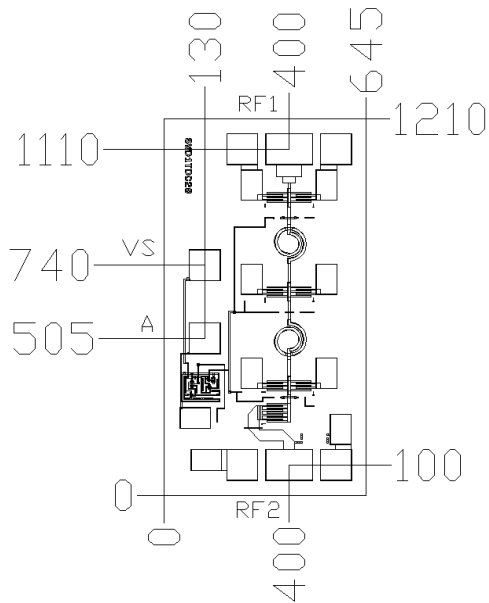
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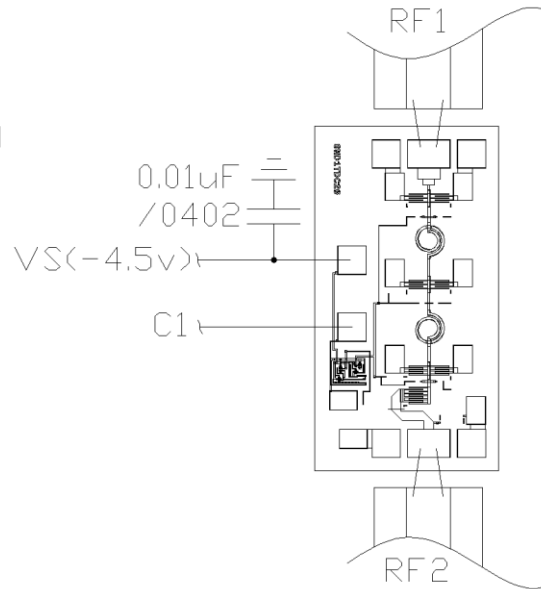
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**Die Outline**  
(All dimensions in  $\mu\text{m}$ )



**Assembly Diagram**



**Attention:**

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