

Features

- Frequency Range: DC~8GHz
- Isolation: >45dB @8GHz
- Insertion Loss: 2.0dB@8GHz
- Non-reflective Switch
- Nanosecond switch
- Die Size: 1.32mm×1.21mm×0.1 mm

Typical Applications

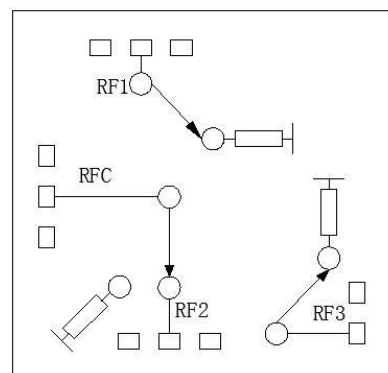
- Radar and ECM
- RF/ Microwave radio
- Military and Space
- Test and Measurement
- Fiber Optics

General Description

SAC3214A is a general purpose broadband high isolation non-reflective GaAs pHEMT SP3T switch in bare die. The switch offers over 45dB isolation and less than 1.5dB insertion loss over operation frequency. Its fast switching and compact size make this SP3T ideal for many critical applications. The switch operates using complementary positive control voltage logic lines of 0/+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 ($T_A = +25^\circ\text{C}$, Voltage = 0/+5V, $Z_0 = 50\Omega$)

Parameter	Freq.	Min.	Typ.	Max.	Units
Insertion loss	DC~8GHz	—	-1.5	—	dB
Isolation	DC~8GHz	—	-50	—	dB
Return Loss RFC(ON)	DC~8GHz	—	-18	—	dB
Return Loss RF1,RF2,RF3(OFF)	DC~8GHz	—	-20	—	dB
Input P_{1dB}	DC~8GHz	—	20	—	dBm
Switching Speed	DC~8GHz	—	30	—	ns

Absolute Maximum Ratings

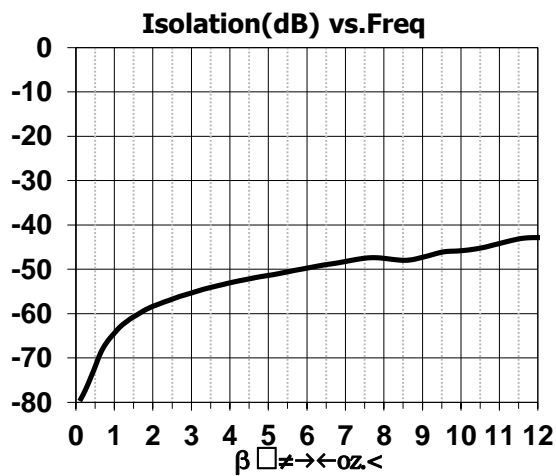
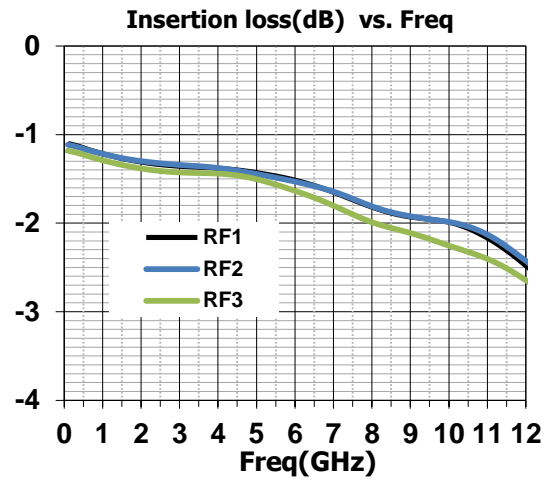
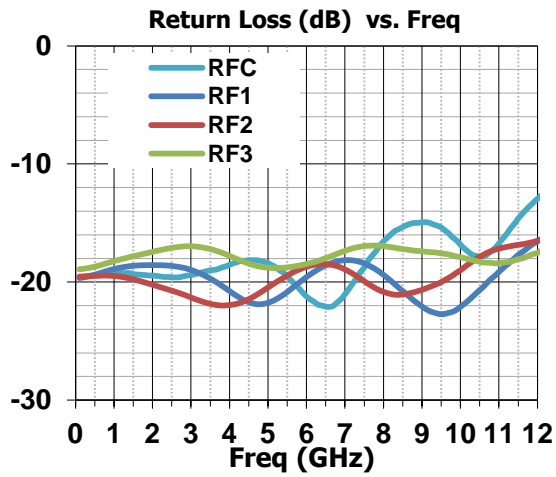
Input power	+35dBm	Control Voltage Range	+0~6V
Channel Temperature	150°C	Storage Temperature	-65°C~+150°C
Operating Temperature	-55°C~+85°C	ESD Sensitivity (HBM)	Class 1A

SAC3214A

GaAs MMIC SP3T Switch
DC~8GHz

Rev 1.3

Typical Performance Curve



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GaAs MMIC SP3T Switch
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Control Voltage

State	Bias Condition
Low	0~0.2V
High	4~5V

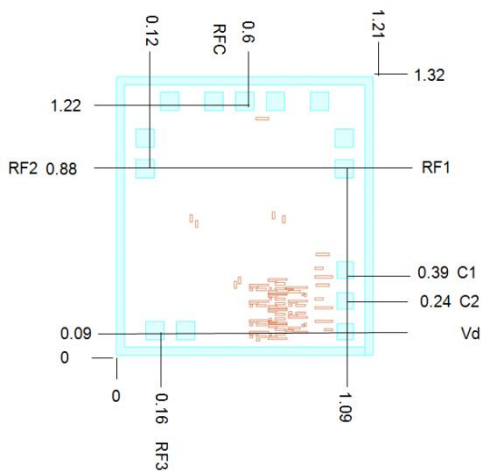
Bias Voltage & Current

V_D	I_D
-4.5V±0.25V	4mA

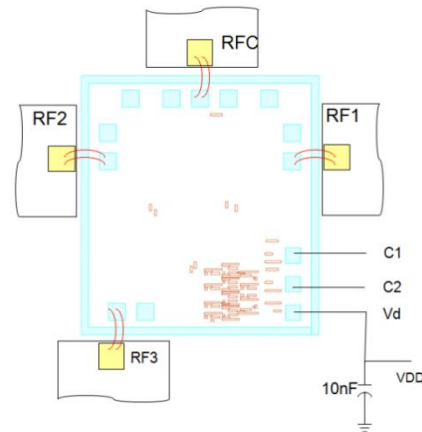
Truth Table

Control Input		Signal Path State		
Ctrl2	Ctrl1	RFC-RF1	RFC-RF2	RFC-RF3
Low	Low	ON	OFF	OFF
Low	High	OFF	ON	OFF
High	Low	OFF	OFF	ON
High	High	OFF	OFF	OFF

Die Outline (all dimensions in mm)



Assembly Diagram



Attention:

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