

# SAC3204SQP3



GaAs MMIC SPDT Switch  
DC~4GHz

Rev 1.0

## Features

- Frequency Range: DC~4GHz
- Isolation: >48dB@4GHz
- Insertion Loss: 0.8dB
- Non-reflective switch
- Nanosecond switch
- Package Size: 3mm×3mm×0.75mm

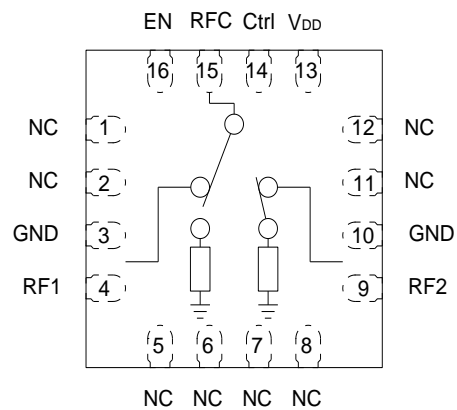
## Typical Applications

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

## General Description

SAC3204SQP3 is a broadband non-reflective GaAs pHEMT SPDT MMIC chip in in leadless 3x3mm surface mount package. Covering DC~4GHz, the switch offers high isolation and low insertion loss. The switch features over 48dB isolation and TYP. 0.8 dB insertion Loss. The switch operates using complementary positive control voltage logic lines of 0/+5V.

## 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~4GHz	—	-0.8	—	dB
Isolation	DC~4GHz	48	70	—	dB
RFC VSWR	DC~4GHz	—	1.2	1.5	:1
RF1,RF2 VSWR(ON)	DC~4GHz	—	1.2	1.4	:1
Output P <sub>1</sub> dB	DC~4GHz	—	29	—	dBm
Output IP <sub>3</sub>	DC~4GHz	—	49	—	dBm
Switching Speed	DC~4GHz	—	50	—	ns

## Absolute Maximum Ratings

Maximum Input Power	+30dBm	Operating Temperature	-55°C~+85°C
Channel Temperature	+150°C	Storage Temperature	-65°C~+150°C
Ctrl Voltage	0~5.5V	ESD Sensitivity	Class 1A
VDD Voltage	4~5.5V		

## SuperApex, LLC

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

# SAC3204SQP3



GaAs MMIC SPDT Switch  
DC~4GHz

Rev 1.0

## Control Voltage

State	Bias Condition
Low	0~0.2V
High	3~5.5V

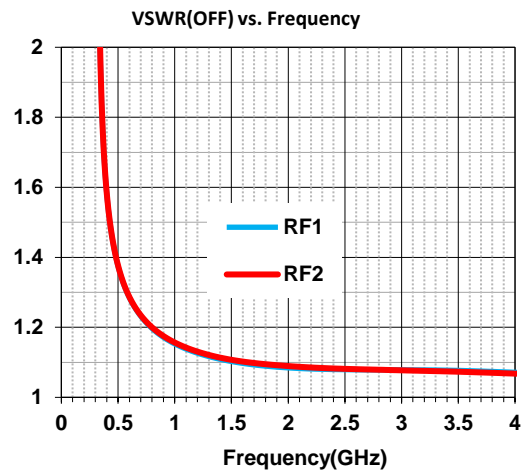
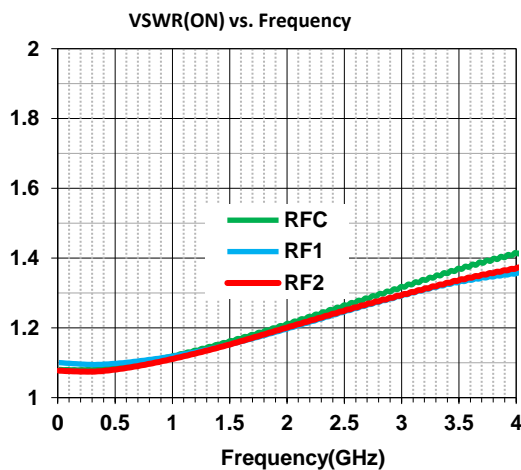
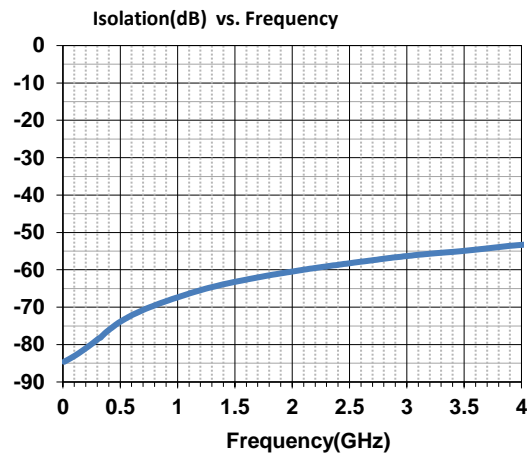
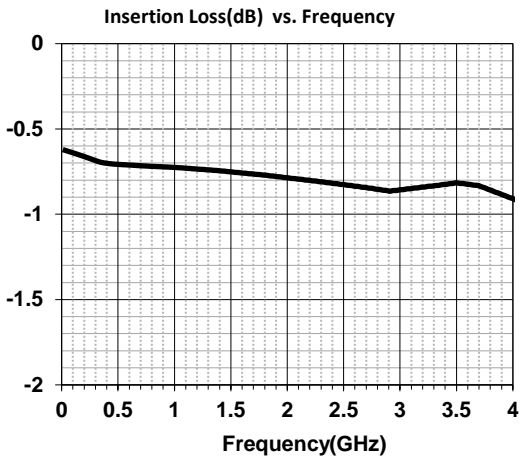
## Truth Table

Control Input		Signal Path State	
Ctrl	EN	RFC-RF1	RFC-RF2
Low	Low	OFF	ON
High	Low	ON	OFF
Low	High	OFF	OFF
High	High	OFF	OFF

## Bias Voltage & Current

V <sub>D</sub>	I <sub>D</sub>
5V	2.2mA

## Typical Performance Curve



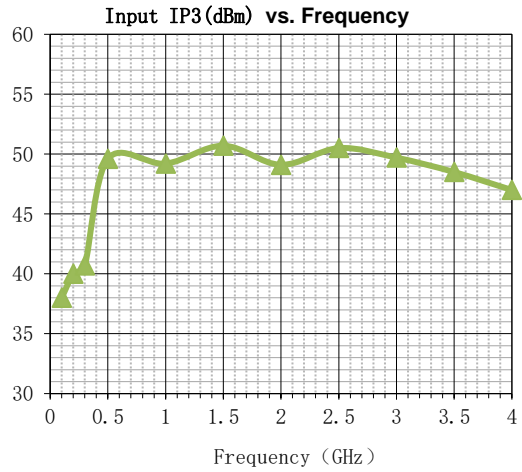
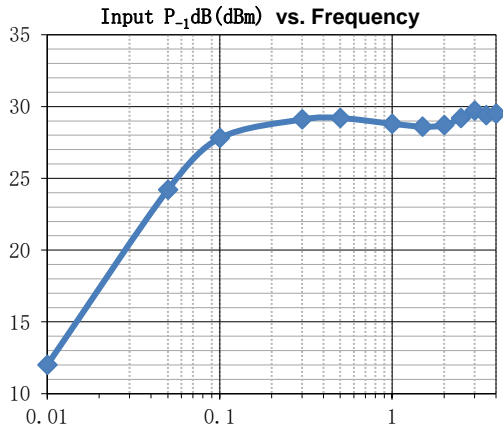
### SuperApex, LLC

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

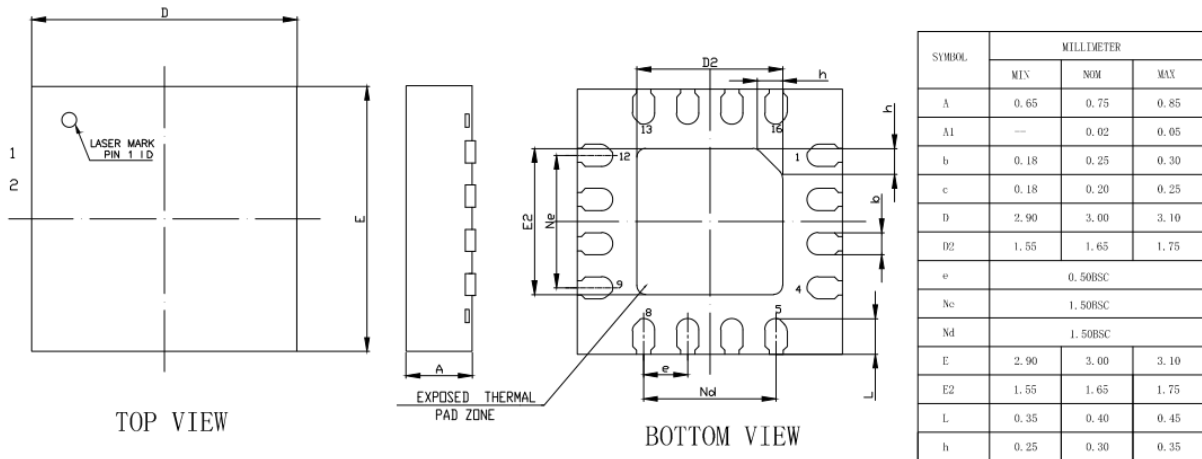
# SAC3204SQP3

GaAs MMIC SPDT Switch  
DC~4GHz

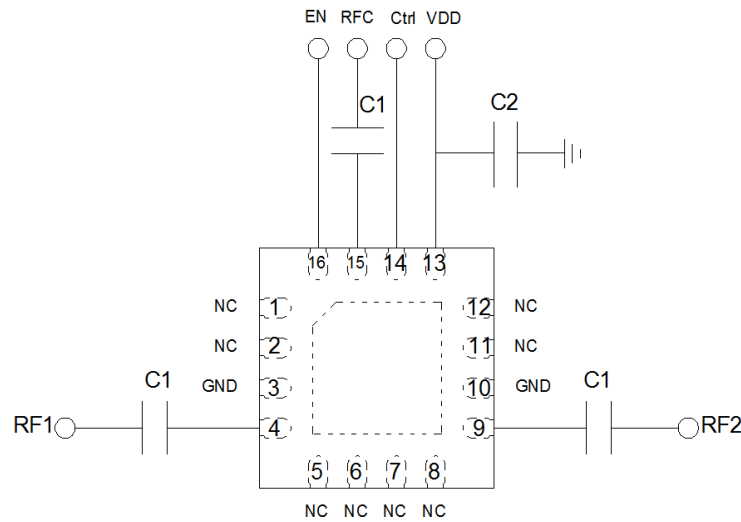
Rev 1.0



## Outline Drawing (All dimensions in mm)



## Application Circuit



### SuperApex, LLC

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

# SAC3204SQP3



GaAs MMIC SPDT Switch  
DC~4GHz

Rev 1.0

## Components List

Reference Des.	Value	Part Number	Manuf.	Size
C2	10nF	GCM155R71H103KA55D	Murata	0402
C1	330pF	GRM022R71C331KE14L	Murata	0402

### Attention:

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

---

### SuperApex, LLC

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