

# SAC3301BQ6



GaAs MMIC 6-BIT DIGITAL PHASE SHIFTER  
0.9~1.3GHz

Rev 1.2

## Features

- Frequency: 0.9~1.3GHz
- RMS of Phase Accuracy: 1.5°
- Low Insertion Loss: 5.5dB
- Positive Voltage Control: 0/+5V
- Size: 6mm×6mm×1.3mm

## Typical Applications

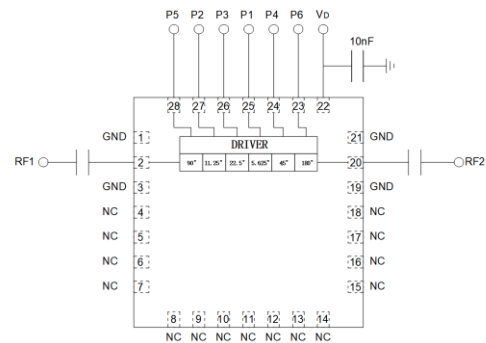
- Radar and ECM
- RF/ Microwave radio
- Military and Space
- Beamforming Modules
- Phase Cancellation

## General Description

SAC3301BQ6 is a 6-bit digital phase shifter which works from 0.9 to 1.3 GHz, providing 360 degrees of phase coverage with a LSB of 5.625 degrees.

SAC3301BQ6 features very low RMS phase error of 1 degree and extremely low insertion loss with variation of ±0.5dB across all phase states. This high accuracy phase shifter is controlled with positive control logic of 0/+5V.

## Functional Diagram



## Electrical Performance

$T_A = +25^\circ\text{C}$ ,  $V_{DD} = -5\text{V}$ , Control Voltage = 0/+5V,  $Z_0 = 50\Omega$

Parameter	Min.	Typ.	Max.	Units
Frequency	0.9~1.3			GHz
RF1 VSWR	—	1.3	—	:1
RF2 VSWR	—	1.3	—	:1
Insertion Loss	—	-4.5	—	dB
IL Variation	—	±0.5	—	dB
Phase Accuracy	—	±2	—	°
RMS of Phase Accuracy	—	1.5	-	°

## Truth Table

0: 0V, 1: +5V

Phase	P1	P2	P3	P4	P5	P6
REF	0	0	0	0	0	0
5.625°	1	0	0	0	0	0
11.25°	0	1	0	0	0	0
22.5°	0	0	1	0	0	0
45°	0	0	0	1	0	0
90°	0	0	0	0	1	0
180°	0	0	0	0	0	1
354.375°	1	1	1	1	1	1

## SuperApex, LLC

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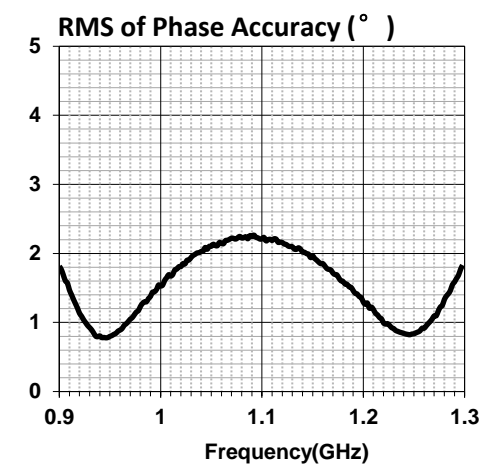
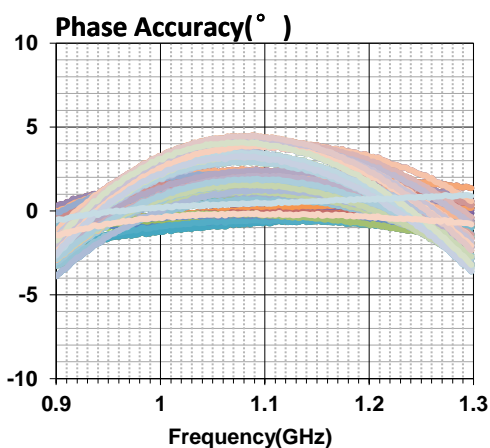
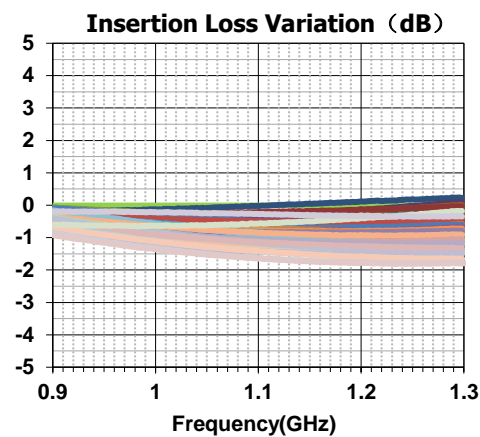
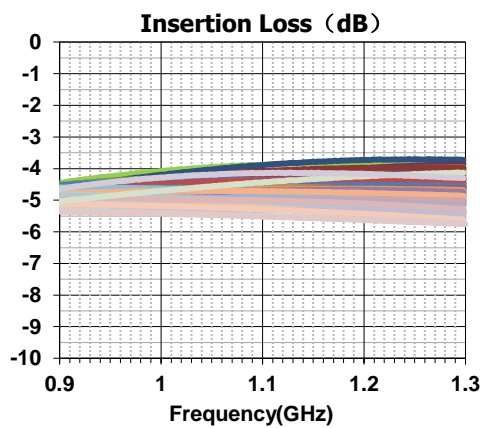
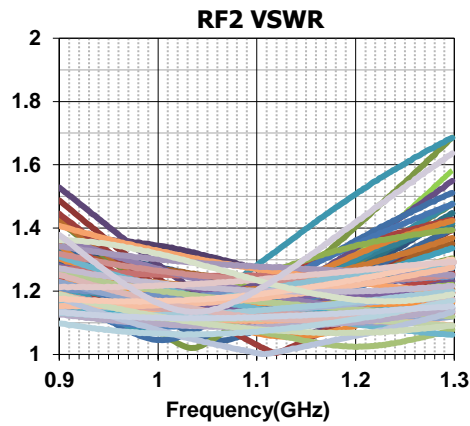
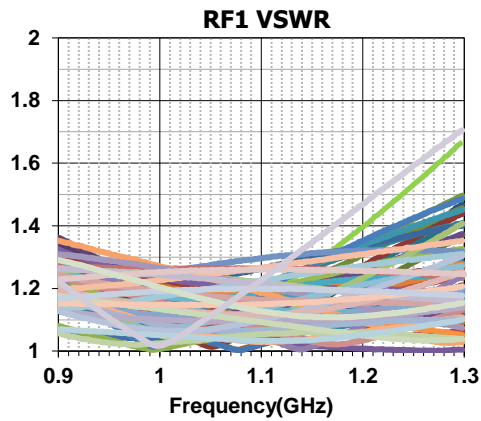
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## Typical Performance Curve



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## Absolute Maximum Ratings

Maximum Input Power	+18dBm	Operating Temperature	-55°C~+85°C
V <sub>DD</sub>	-5V±0.25V	Storage Temperature	-65°C~+150°C

## Logic Voltage

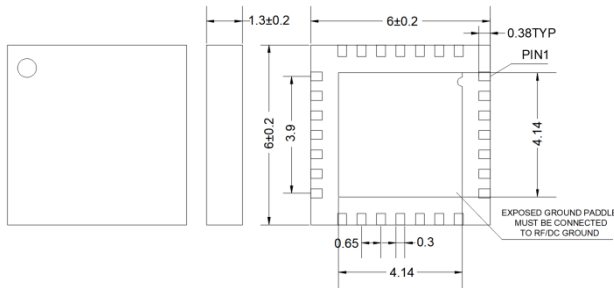
State	Bias
LOW	0~0.2V
HIGH	3~5.5V

## Power Supply

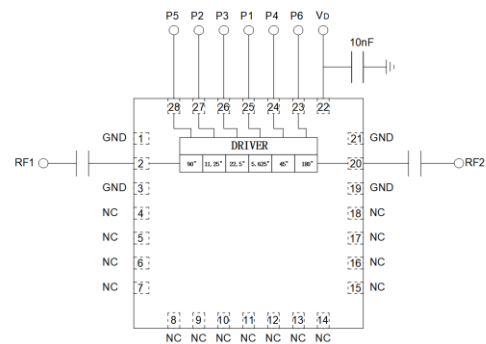
V <sub>D</sub>	I <sub>D</sub>
-5V	8mA

## Outline Drawing

All dimensions in mm



## 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  $125\pm 5^{\circ}\text{C}$  environment before soldering.
3. GaAs MMIC devices are susceptible to damage from electrostatic discharge. Proper precautions should be observed during handling, assembly and test.

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