

SAC3301B



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

Rev 1.1

Features

- Frequency: 0.9~1.3GHz
- RMS of Phase Accuracy: 1.5°
- Low Insertion Loss: 5.5dB
- Positive Voltage Control: 0/+5V
- Die Size: 3.74mm×1.25mm×0.1mm

Typical Applications

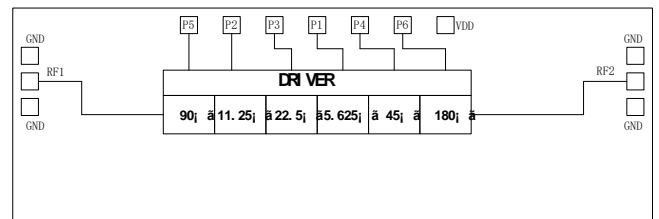
- Radar and ECM
- RF/ Microwave radio
- Military and Space
- Beamforming Modules
- Phase Cancellation

General Description

SAC3301B 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.

SAC3301B features very low RMS phase error of 1 degree and extremely low insertion loss with variation of ± 0.5 dB 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

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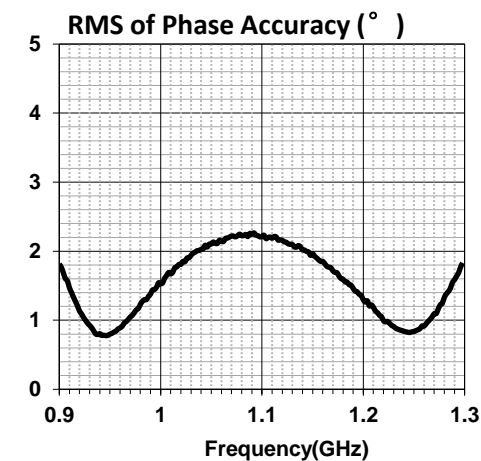
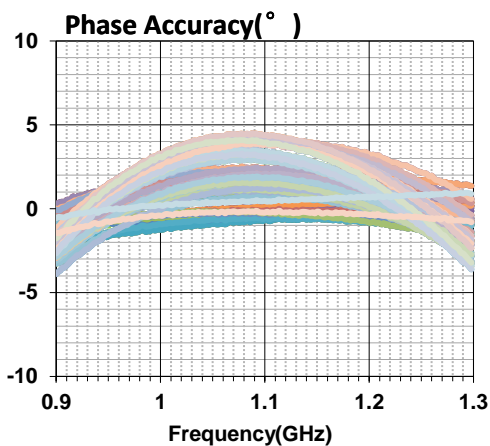
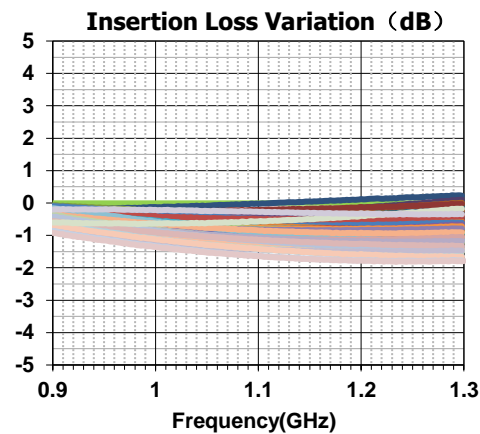
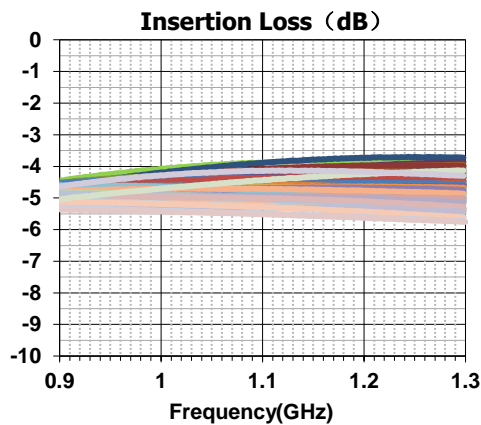
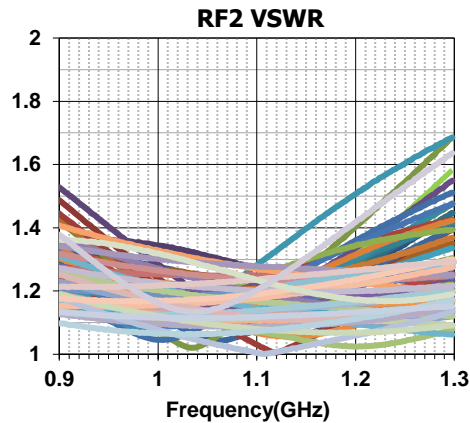
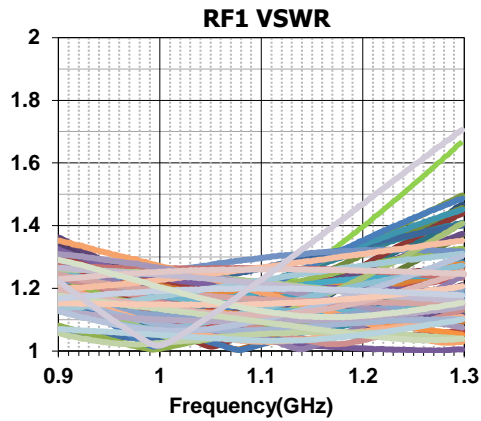
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Typical Performance Curve



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Absolute Maximum Ratings

Maximum Input Power	+18dBm	Operating Temperature	-55°C~+85°C
V _{DD}	-5V±0.25V	Storage Temperature	-65°C~+150°C

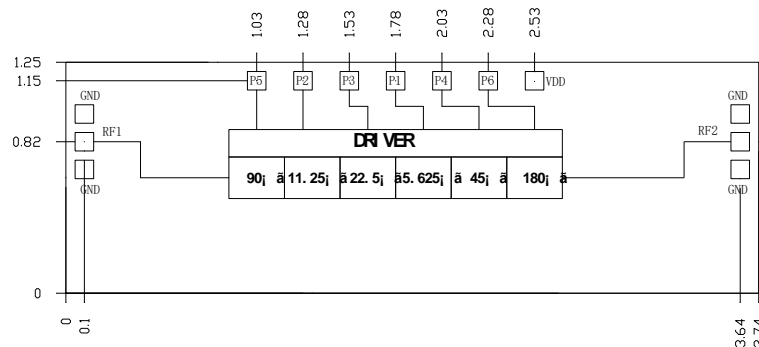
Logic Voltage

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

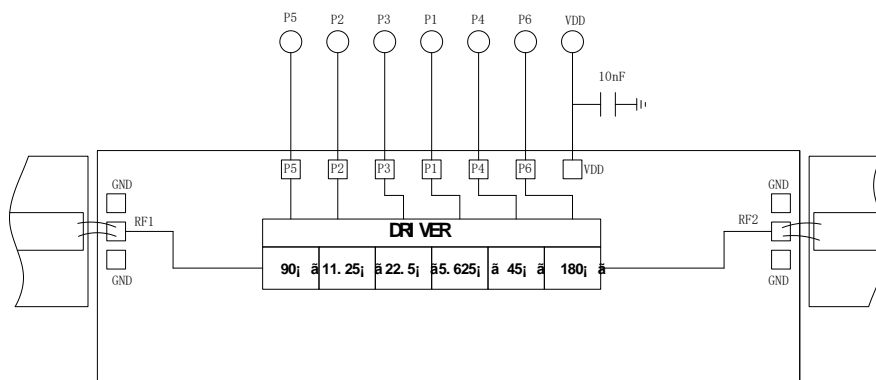
Power Supply

V _D	I _D
-5V	8mA

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.

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