

SAC3304

GaAs MMIC 6-Bit Digital Phase Shifter
2.7~3.5GHz

Rev 2.1

Features

- Frequency: 2.7~3.5GHz
- RMS of Phase Accuracy: 2°
- Low Insertion Loss: 5.2dB
- Positive Voltage Control
- Die Size: 3.8mm×1.25mm×0.1mm

Typical Applications

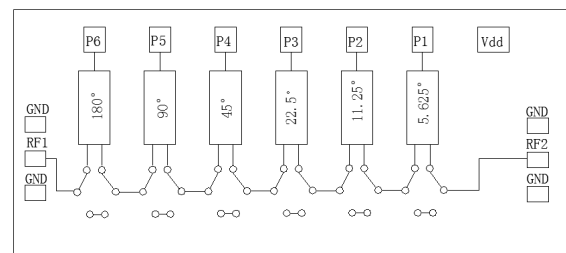
- EW
- Military Radar and Weather Radar
- SATCOM
- Beamforming
- Phase Cancellation

General Description

SAC3304 is a 6-bit digital phase shifter which works from 2.7 to 3.5GHz, providing 360 degrees of phase coverage with a LSB of 5.625 degrees.

SAC3304 features very low RMS phase error of 2 degrees and extremely low insertion loss variation of ± 0.5 dB across all phase states. This high accuracy phase shifter is controlled with positive control voltage of 0/+5V.

Functional Diagram



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

Parameter	Min.	Typ.	Max.	Units
Frequency	2.7~3.5			GHz
Input VSWR	—	1.55	—	:1
Output VSWR	—	1.4	—	:1
Insertion Loss	—	-5.2	—	dB
IL Variation	-0.5	—	0.5	dB
Phase Accuracy	-2	—	4.5	°
RMS of Phase Accuracy	—	2	—	°

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 Corporation

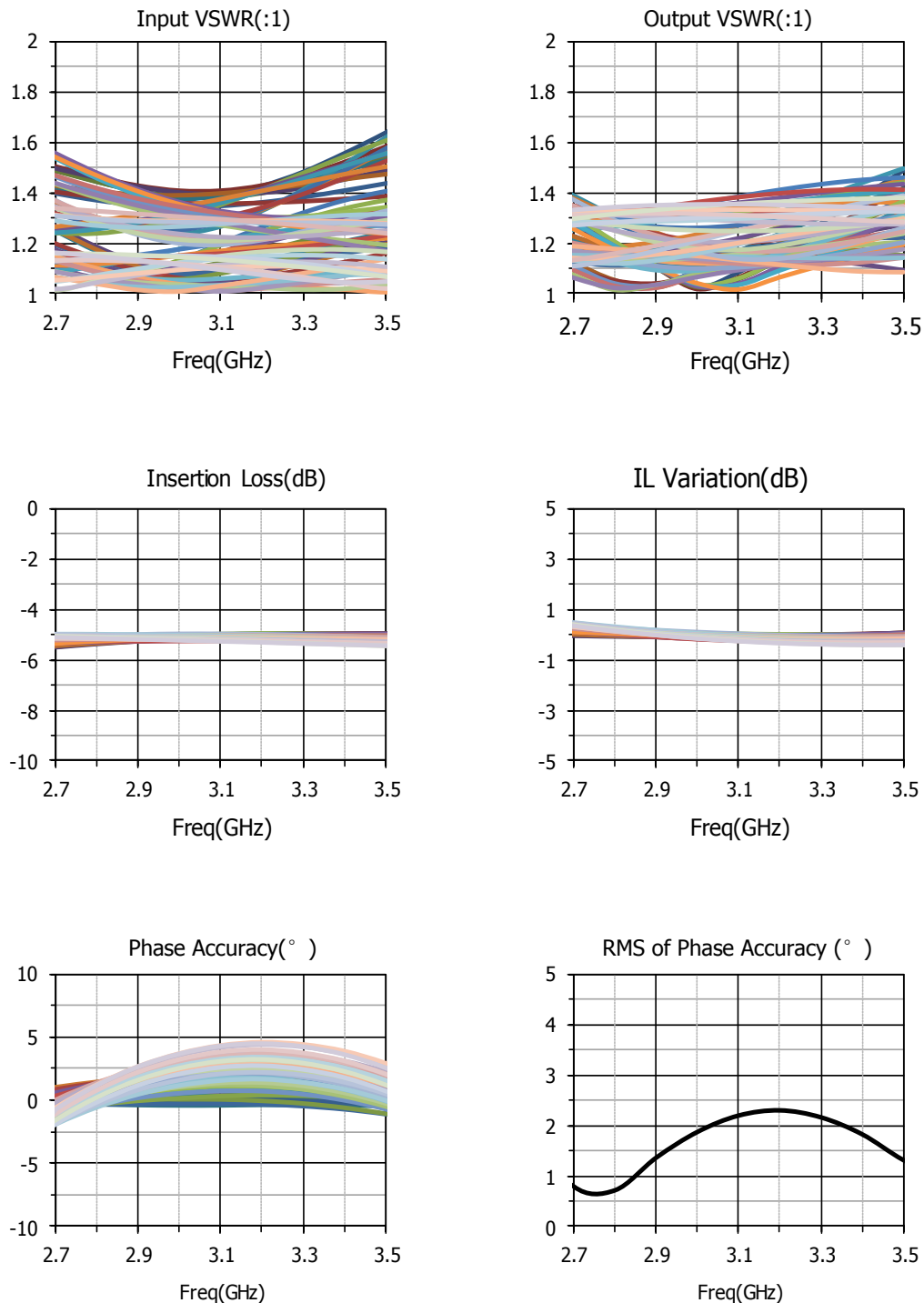
Address: 1580 S. Milwaukee Ave. Suite 405, Libertyville, IL 60048, USA
Tel: 1-847-573-9866, 1-847-505-8319
E-mail: sales@superapexco.com
Website: www.superapexco.com

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Typical Performance Curve



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Absolute Maximum Ratings

Maximum Input Power	+23dBm	Operating Temperature	-55°C~+85°C
Maximum Input Voltage	-8V	Storage Temperature	-65°C~+150°C

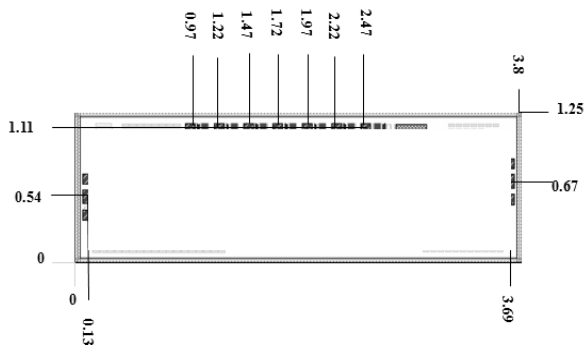
Control Voltage

State	Bias
Low	0~0.2V
High	4.5~5.5V

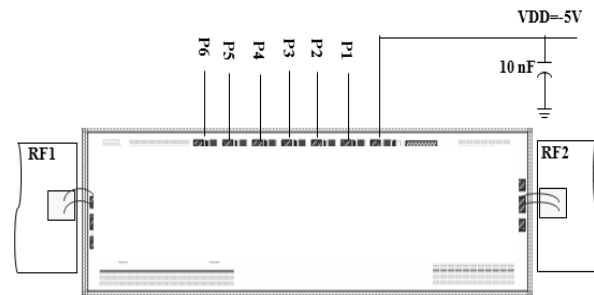
Power Supply

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.