

SAC3311AQ6



GaAs MMIC 6-BIT DIGITAL PHASE SHIFTER
1.2~1.8GHz

Rev 1.0

Features

- Frequency: 1.2~1.8GHz
- RMS of Phase Accuracy: 1°
- Low Insertion Loss: 4.7dB
- Positive Voltage Control
- Package Size: 6mm×6mm×1.3mm

Typical Applications

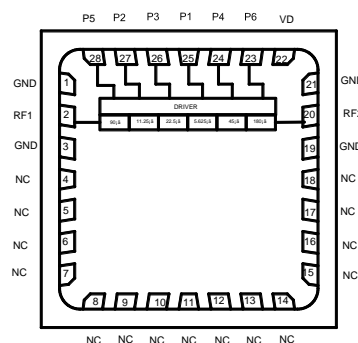
- EW
- Military Radar and Weather Radar
- SATCOM
- Beamforming Modules
- Phase Cancellation

General Description

SAC3311AQ6 is a 6-bit digital phase shifter which works from 1.2 to 1.8GHz, providing 360 degrees of phase coverage with a LSB of 5.625 degrees.

SAC3311AQ6 features very low RMS phase error of 1 degrees and extremely low insertion loss variation of ± 0.3 dB across all phase states. This high accuracy phase shifter is controlled with positive control voltage of 0/+5V.

Functional Diagram



Electrical Performance

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

Parameter	Min.	Typ.	Max.	Units
Frequency		1.2~1.8		GHz
Input VSWR	—	1.4	—	:1
Output VSWR	—	1.4	—	:1
Insertion Loss	—	-4.7	—	dB
IL Variation	—	± 0.3	—	dB
Phase Accuracy	—	± 2	—	°
RMS of Phase Accuracy	—	1	—	°

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

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

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Absolute Maximum Ratings

Maximum Input Power	+23dBm	Operating Temperature	-55°C~+85°C
Maximum Input Voltage	-5.5V	Storage Temperature	-65°C~+150°C

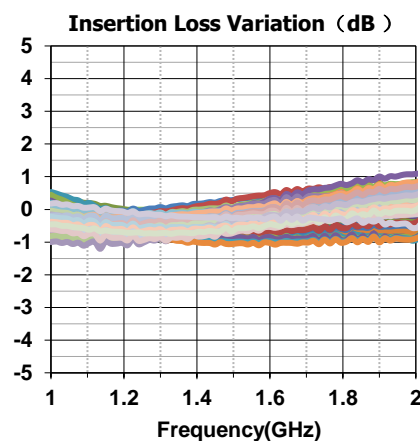
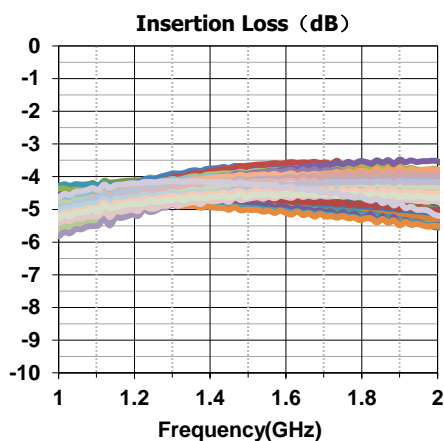
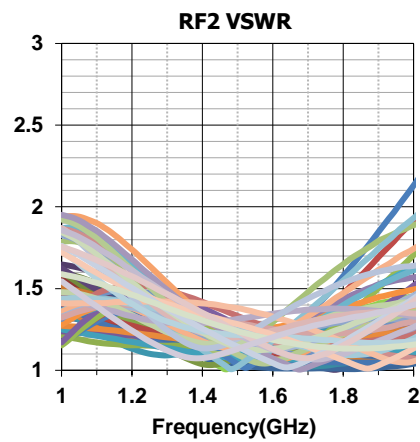
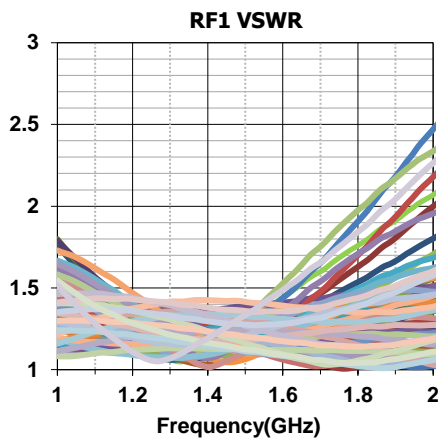
Control Voltage

State	Bias
Low	0~0.2V
High	3.0~5.5V

Power Supply

V _D	I _D
-5V	8mA

Typical Performance Curve



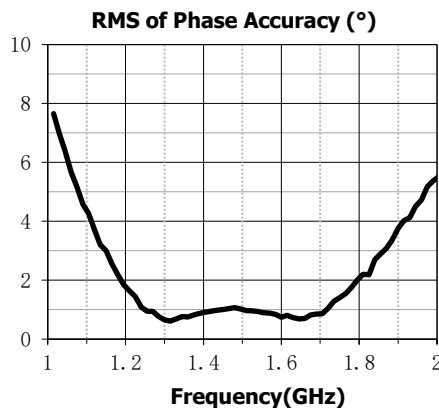
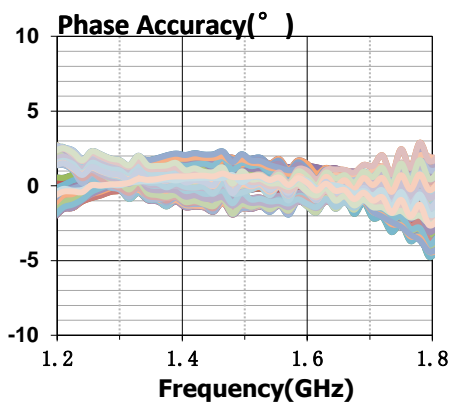
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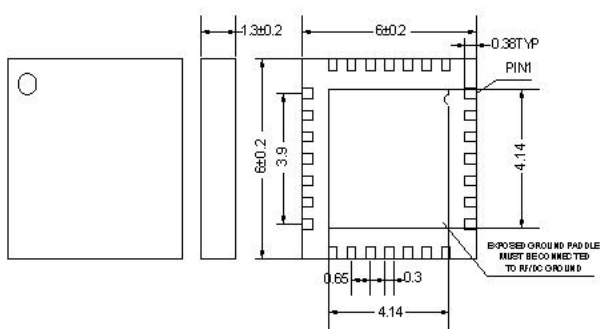
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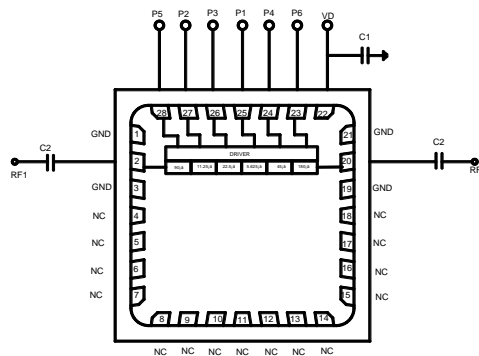


Die Outline

All dimensions in mm



Assembly Diagram



Components List

Reference Des.	Value	Part Number	Manuf.	Size
C1	1000pF	GRM1555C1H102JA1D	Murata	0402
C2	51pF	GRM1555C1H510JA01D	Murata	0402

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.