

SAC3311Q6



GaAs MMIC 6-BIT DIGITAL PHASE SHIFTER
1.2~1.6GHz

Rev 1.0

Features

- Frequency: 1.2~1.6GHz
- RMS of Phase Accuracy: 1.2°
- Low Insertion Loss: 5.2dB
- Positive Voltage Control
- Size: 6mm×6mm×1.3mm

Typical Applications

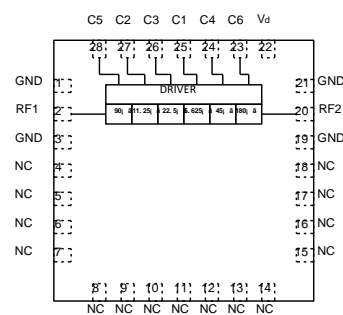
- EW
- Military Radar and Weather Radar
- SATCOM
- Beamforming Modules
- Phase Cancellation

General Description

SAC3311Q6 is a 6-bit digital phase shifter which works from 1.2 to 1.6GHz, providing 360 degrees of phase coverage with a LSB of 5.625 degrees.

SAC3311Q6 features very low RMS phase error of 1.2 degrees typ. and extremely low insertion loss variation of ±0.2 dB typ. 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	1.2~1.6			GHz
RF1 VSWR	—	1.3	—	:1
RF2 VSWR	—	1.3	—	:1
Insertion Loss	—	-5.0	—	dB
IL Variation	—	±0.2	—	dB
Phase Accuracy	—	±2	—	°
RMS of Phase Accuracy	—	1.2	—	°

Truth Table (0: 0V, 1: +5V)

Phase	C1	C2	C3	C4	C5	C6
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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Absolute Maximum Ratings

Maximum Input Power	+20dBm	Operating Temperature	-55°C~+85°C
Maximum Input Voltage	-5.5V	Storage Temperature	-65°C~+150°C

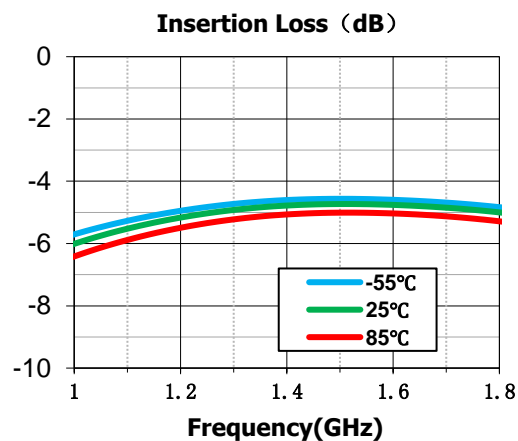
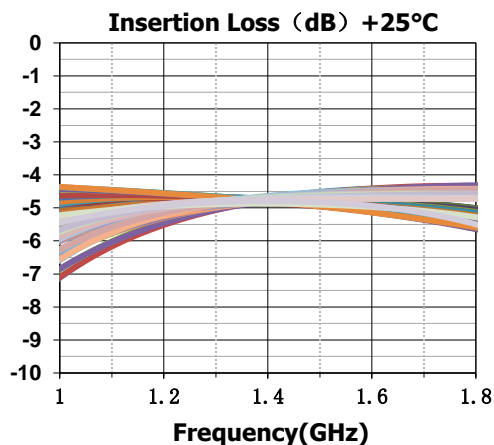
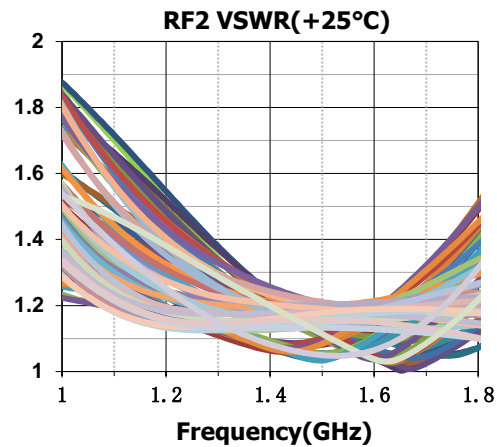
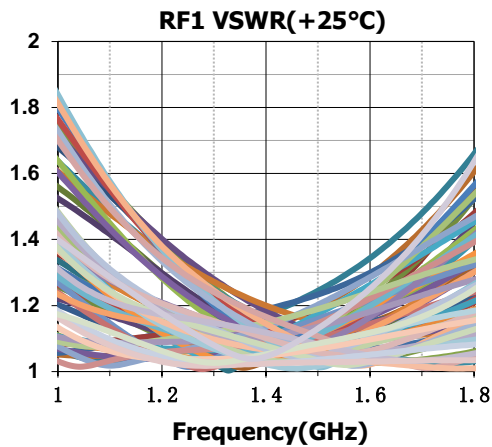
Control Voltage

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

Power Supply

Vd	Id
-5V	8mA

Typical Performance Curve



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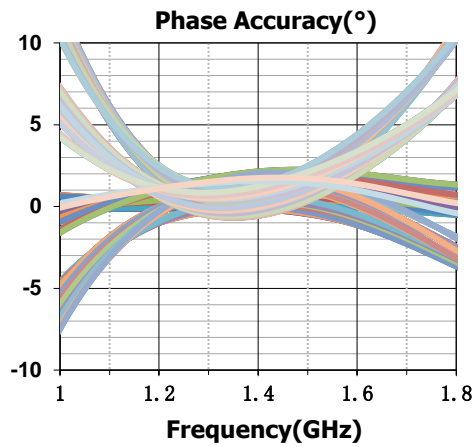
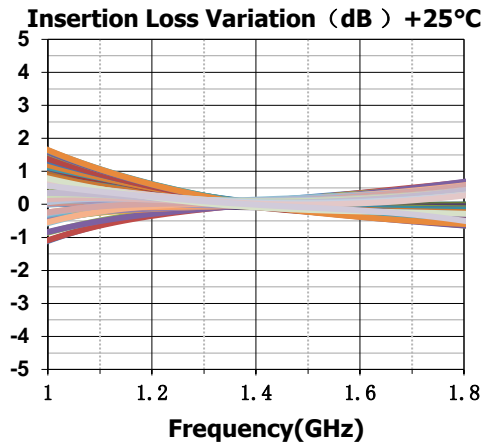
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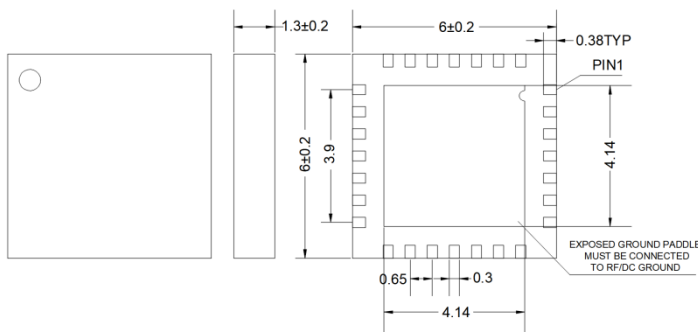
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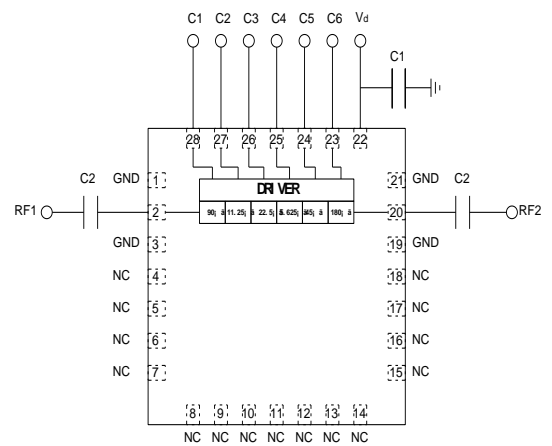


Outline Drawing

All dimensions in mm



Assembly Diagram



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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.

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