

SAC3315

GaAs MMIC 6-BIT DIGITAL PHASE SHIFTER
1~2GHz

Rev 1.4

Features

- Frequency : 1~2GHz
- RMS of Phase Accuracy: 2°
- Low Insertion Loss: 8dB
- Positive Voltage Control
- Die Size: 2.42mmx2.9mmx0.1mm

Typical Applications

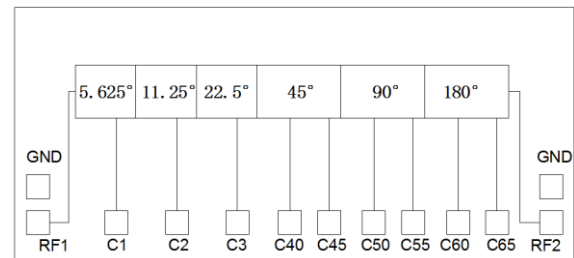
- EW
- Radar and Weather Radar
- SATCOM
- Beamforming Modules
- Phase Cancellation

General Description

SAC3315 is a 6-bit digital phase shifter which works from 1.0 to 2.0 GHz, providing 360 degrees of phase coverage with a LSB of 5.625 degrees.

SAC3315 features extremely low insertion loss variation of ± 1 dB across all phase states.

Functional Diagram



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

Parameter	Min.	Typ.	Max.	Units
Frequency		1~2		GHz
RF1 Return Loss	—	-20	—	dB
RF2 Return Loss	—	-20	—	dB
Insertion Loss	—	-8	—	dB
IL Variation	—	± 1	—	dB
Input P_{-1} dB	—	24	—	dBm
Input IP_3	—	38	—	dBm

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

Phase	C1	C2	C3	C40	C45	C50	C55	C60	C65
REF	0	0	0	0	1	0	1	0	1
-5.625°	1	0	0	0	1	0	1	0	1
-11.25°	0	1	0	0	1	0	1	0	1
-22.5°	0	0	1	0	1	0	1	0	1
-45°	0	0	0	1	0	0	1	0	1
-90°	0	0	0	0	1	1	0	0	1
-180°	0	0	0	0	1	0	1	1	0
-354.375°	1	1	1	1	0	1	0	1	0

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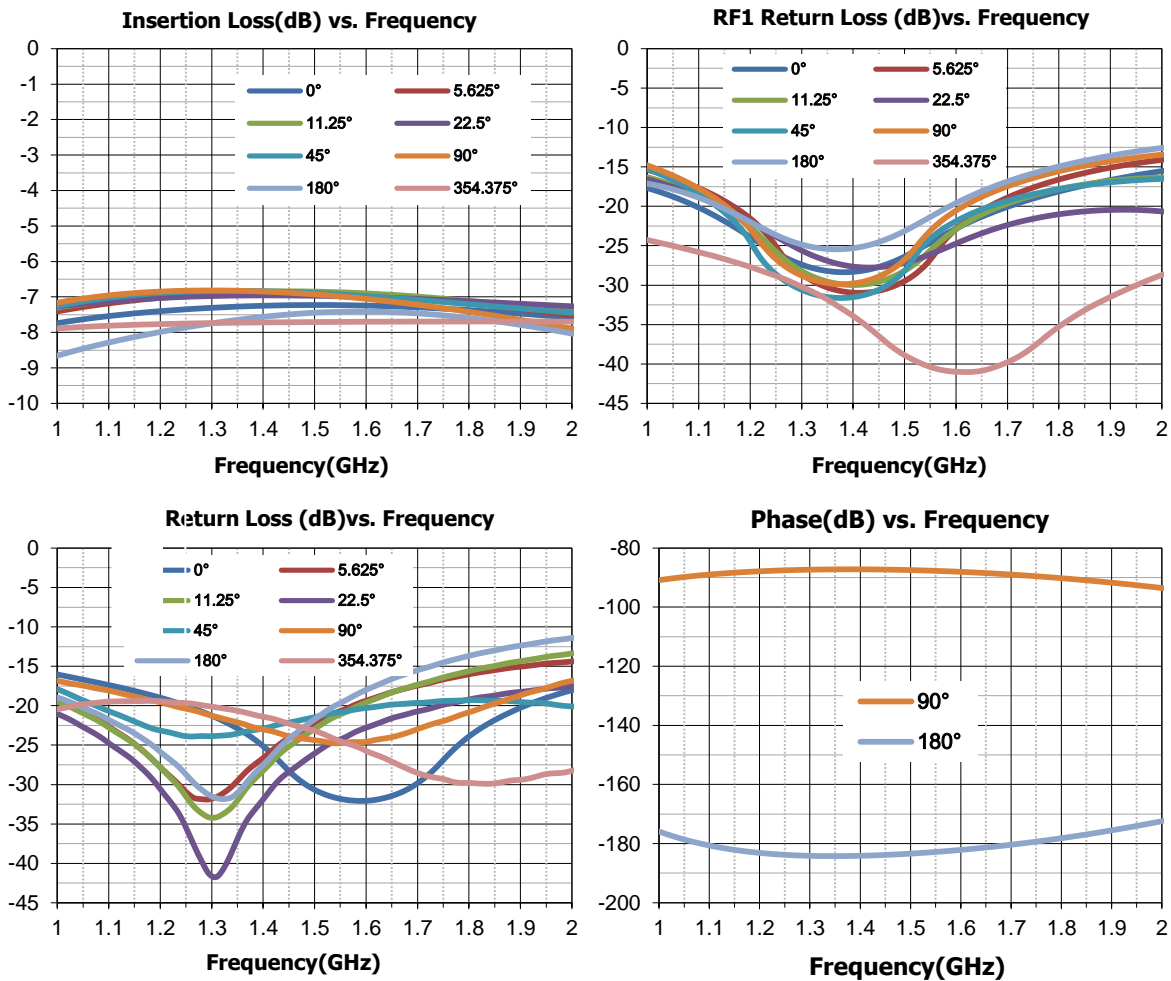
Absolute Maximum Ratings

Maximum Input Power	+18dBm	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

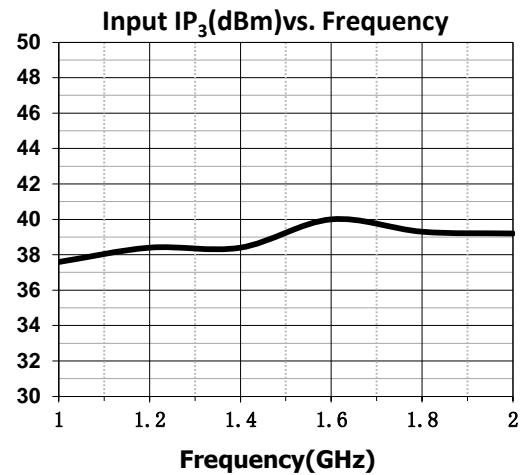
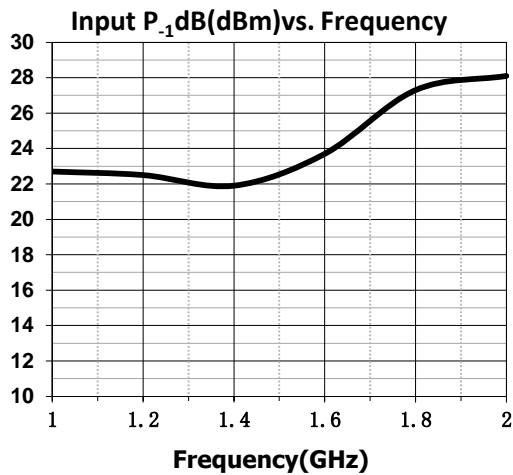
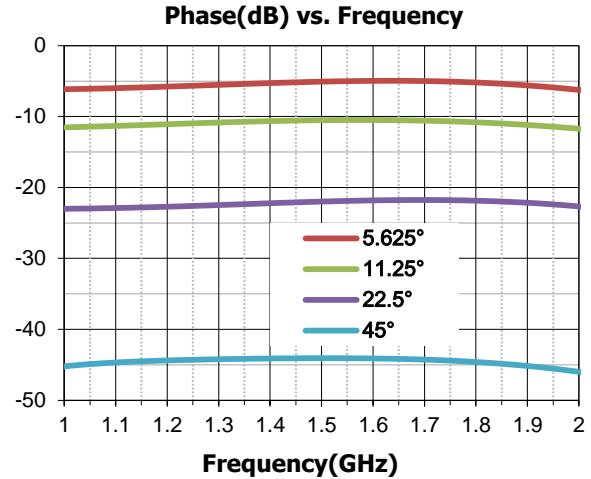
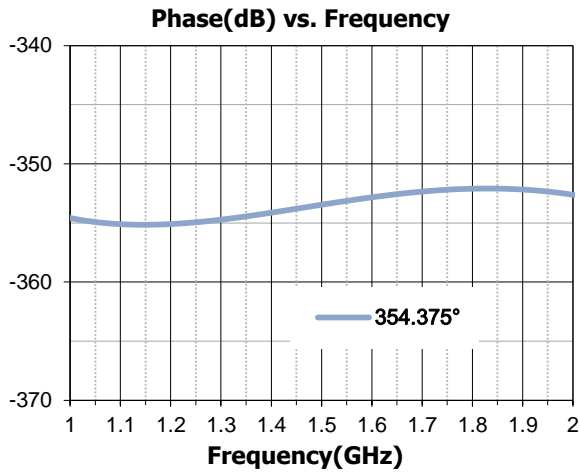
Typical Performance Curve



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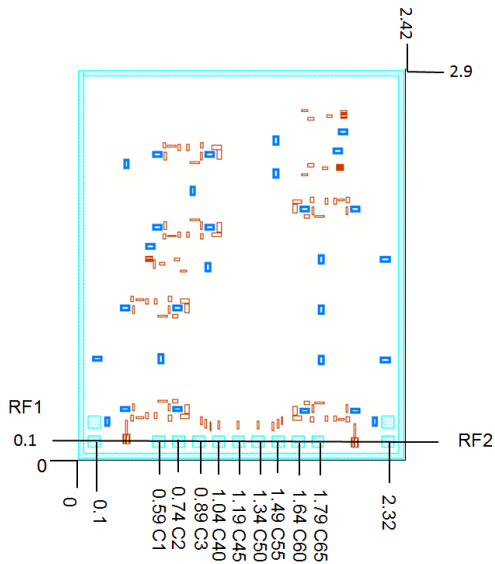


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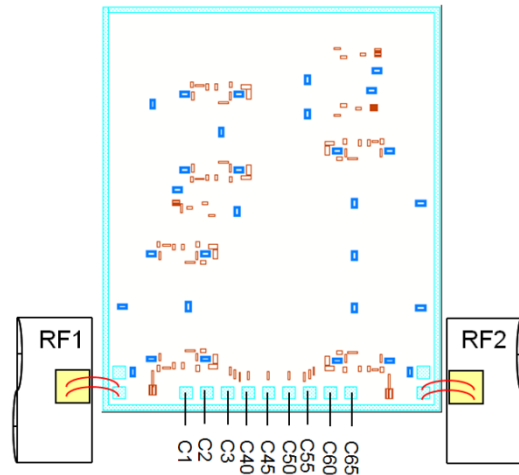
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Die Outline
(all dimensions in mm)



Assembly Diagram



Attention:

GaAs MMIC devices are susceptible to damage from electrostatic discharge. Proper precautions should be observed during handling, assembly and test.