

# SAC3403

GaAs MMIC Digital Attenuator  
8~12GHz

Rev 2.1

## Features

- Frequency: 8~12GHz
- RMS of Attenuation Accuracy: 0.5dB
- Insertion Loss: 3.8dB
- Positive Voltage Control
- Die Size: 1.79mm×1.25mm×0.1mm

## Typical Applications

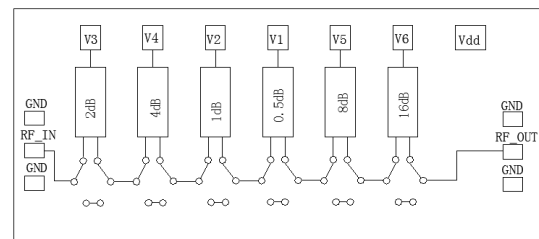
- EW
- Cellular Infrastructure
- SATCOM
- Beamforming Modules
- Test Equipment and Sensors

## General Description

SAC3403 is a broadband 6-bit GaAs digital attenuator MMIC chip. Covering 8 to 12GHz, the insertion loss is less than 3.8 dB typically. The attenuator bit values are 0.5dB, 1dB, 2dB, 4dB, 8dB and 16dB for a total attenuation of 31.5dB. Three TTL 0/+5V inputs are used to select each attenuation state.

The chip offers full passivation for increased reliability and moisture protection.

## 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	8~12			GHz
Input VSWR	—	1.3	—	:1
Output VSWR	—	1.3	—	:1
Insertion Loss	—	-3.8	—	dB
$A_{TT}$ -Phase Error	-2	—	2.5	°
Attenuation Accuracy	-0.5	—	1	dB
RMS of Attenuation Accuracy	—	0.5	—	dB

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

Attenuation	V1	V2	V3	V4	V5	V6
REF	0	0	0	0	0	0
0.5dB	1	0	0	0	0	0
1dB	0	1	0	0	0	0
2dB	0	0	1	0	0	0
4dB	0	0	0	1	0	0
8dB	0	0	0	0	1	0
16dB	0	0	0	0	0	1
31.5dB	1	1	1	1	1	1

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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

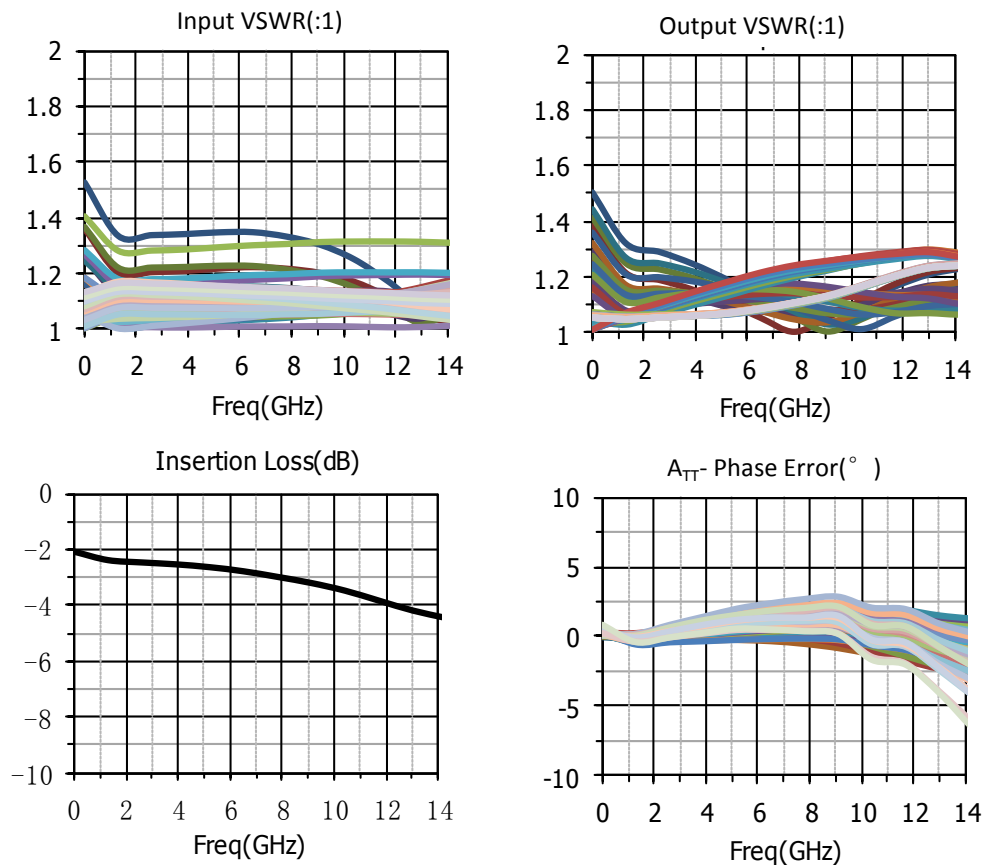
### Control Voltage

State	Bias
Low	0~0.5V
High	4.5~5.5V

### Power Supply

V <sub>D</sub>	I <sub>D</sub>
-5V	8mA

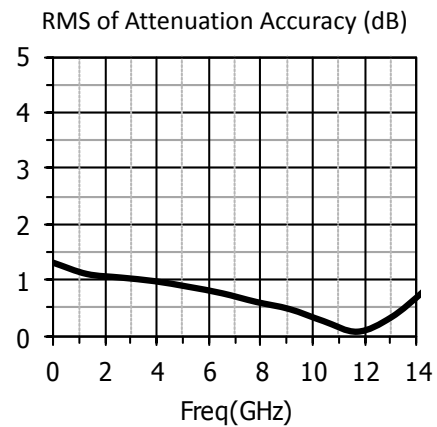
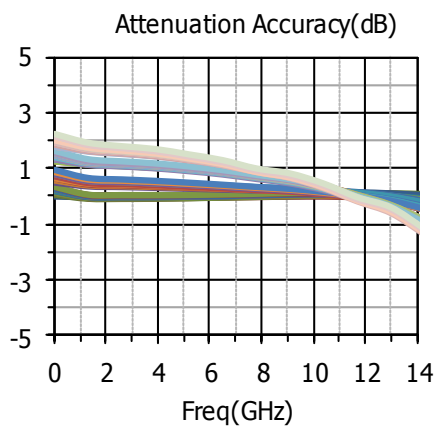
## Typical Performance Curve



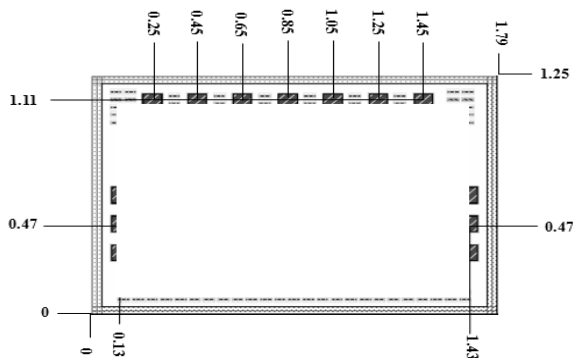
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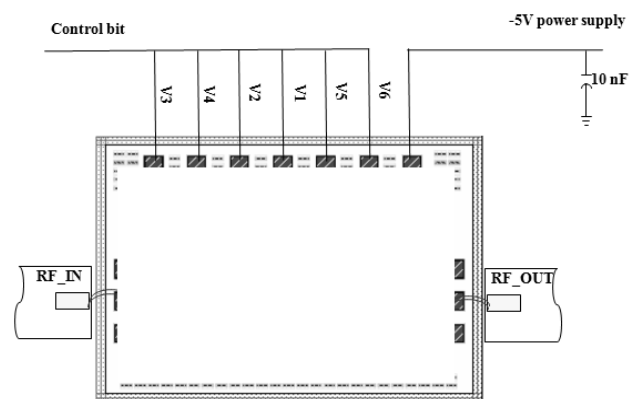
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## Die Outline (all dimensions in mm)



## Assembly Diagram



### Attention:

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