

SAC3406BSPQ4



GaAs MMIC Digital Attenuator
DC~12GHz

Rev 1.0

Features

- Frequency: DC~12GHz
- RMS of Attenuation Accuracy: 0.5dB
- Insertion Loss: 1.8dB
- Positive Voltage Control
- Size: 4mm×4mm×1.2mm

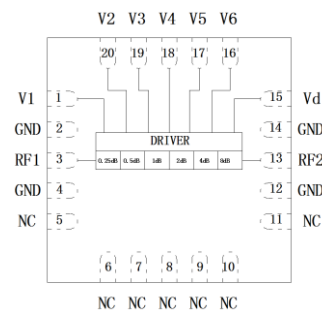
Typical Applications

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

General Description

SAC3406BSPQ4 is a broadband 6-bit GaAs digital attenuator MMIC chip. Covering DC to 12GHz, the insertion loss is less than 2.5 dB typically. The attenuator bit values are 0.25dB, 0.5dB, 1dB, 2dB, 4dB and 8dB for a total attenuation of 15.75dB. Three TTL 0/+5V inputs are used to select each attenuation state.

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	DC~12			GHz
Input VSWR	—	1.3	1.5	:1
Output VSWR	—	1.2	1.5	:1
Insertion Loss	—	-1.8	-2.5	dB
A_{IT} -Phase Error	-3	—	2	°
Attenuation Accuracy	-0.5	0.5	2	dB
RMS of Attenuation Accuracy	—	0.5	1	dB

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

Attenuation	V1	V2	V3	V4	V5	V6
REF.	0	0	0	0	0	0
0.25dB	5	0	0	0	0	0
0.5dB	0	5	0	0	0	0
1dB	0	0	5	0	0	0
2dB	0	0	0	5	0	0
4dB	0	0	0	0	5	0
8dB	0	0	0	0	0	5
15.75dB	5	5	5	5	5	5

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Control Voltage

State	Bias
Low	0~0.3V
High	3.2~5.5V

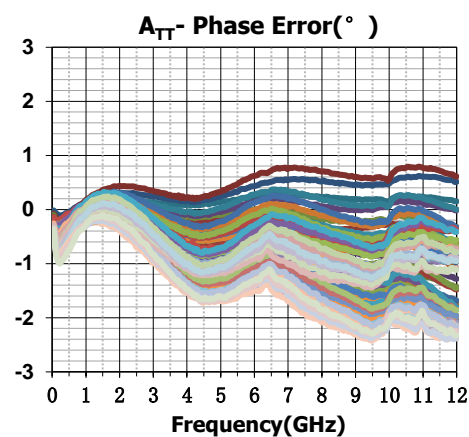
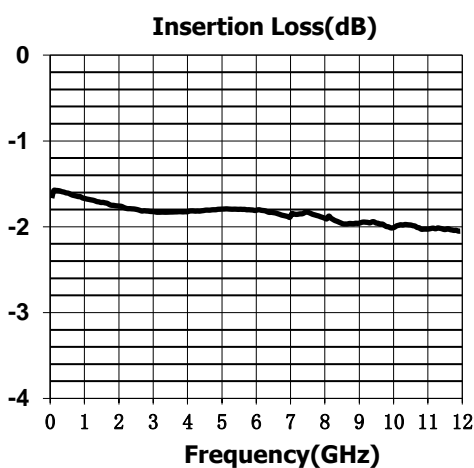
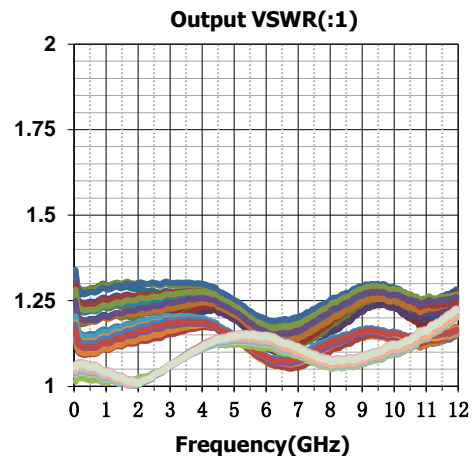
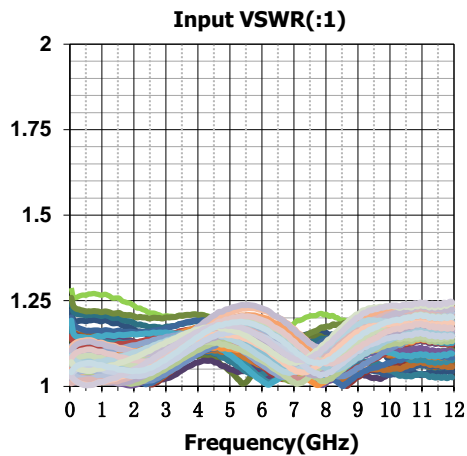
Power Supply

V _D	I _D
-4.75~-5V	6mA

Absolute Maximum Ratings

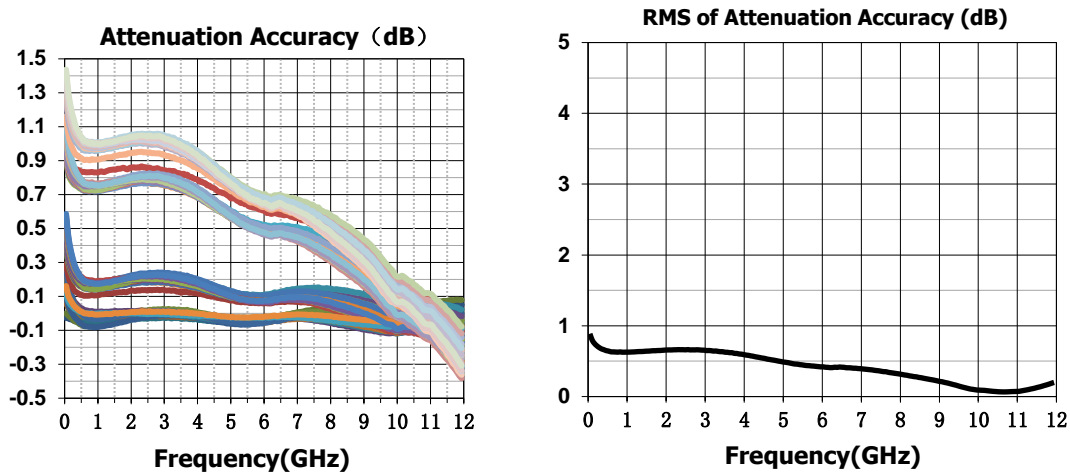
Maximum Input Power	Maximum Input Voltage
+23dBm(f>1GHz)	-8V
Operating Temperature	Storage Temperature
-55°C~+85°C	-65°C~+150°C

Typical Performance Curve



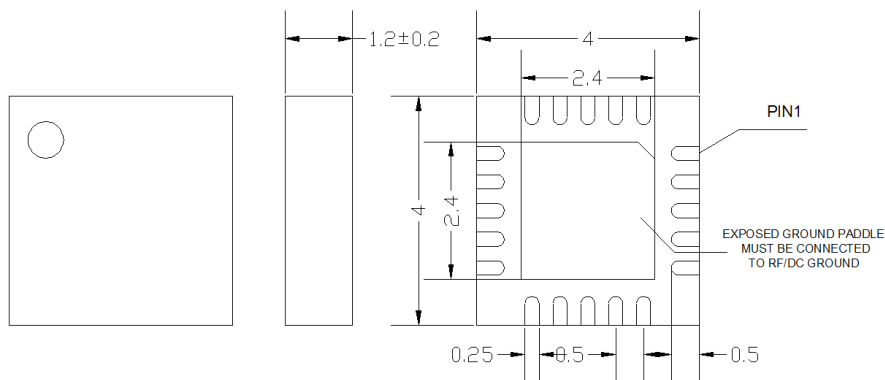
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Outline Drawing

(All dimensions in mm)



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.

Revision History

Revision	Date	Comment
1.0	Jun. 27, 2023	First Release