SAC3402AQP4

GaAs MMIC Digital Attenuator
DC~6GHz

Rev 1.0

Features

- Frequency：DC~6GHz
- RMS of Attenuation Accuracy：0.8dB
- Low Insertion Loss：2.6dB
- Positive Voltage Control
- Package Size：4mm×4mm×0.75mm

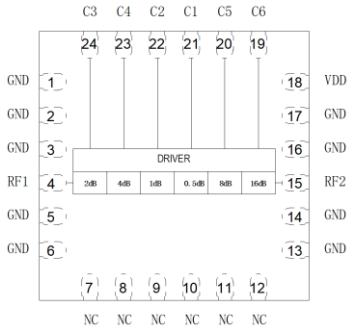
Typical Applications

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

General Description

SAC3402AQP4 is a broadband 6-bit GaAs digital attenuator MMIC chip. Covering DC to 6 GHz, the insertion loss is about 2.6dB typically. The attenuator bit values are 0.5dB, 1dB, 2dB, 4dB, 8dB, and 16dB for a total attenuation of 31.5dB. Six LVTTL-Compatible inputs are used to select each attenuation state.

Functional Diagram



Electrical Performance (T_A=+25℃,V_D=-5V,Control Voltage=0/+5V,Z_O=50Ω)

Parameter	Min.	Typ.	Max.	Units
Frequency		DC~6		GHz
Input VSWR	—	1.4	—	:1
Output VSWR	—	1.4	—	:1
Insertion Loss	—	-2.6	—	dB
A_{TT}-Phase Error	-3	—	2.5	°
Attenuation Accuracy	-0.3	—	1.0	dB
RMS of Attenuation Accuracy	—	0.8	—	dB
Amplitude Settling Time	—	100	—	ns

Truth Table (0：0V，1：+5V)

Attenuation	C1	C2	C3	C4	C5	C6
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

RoHS

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Absolute Maximum Ratings

Maximum Input Power(0.5~6GHz)	+23dBm	Operating Temperature	-55℃~+85℃
Bias Voltage (VDD)	-5.25V	Storage Temperature	-65℃~+150℃

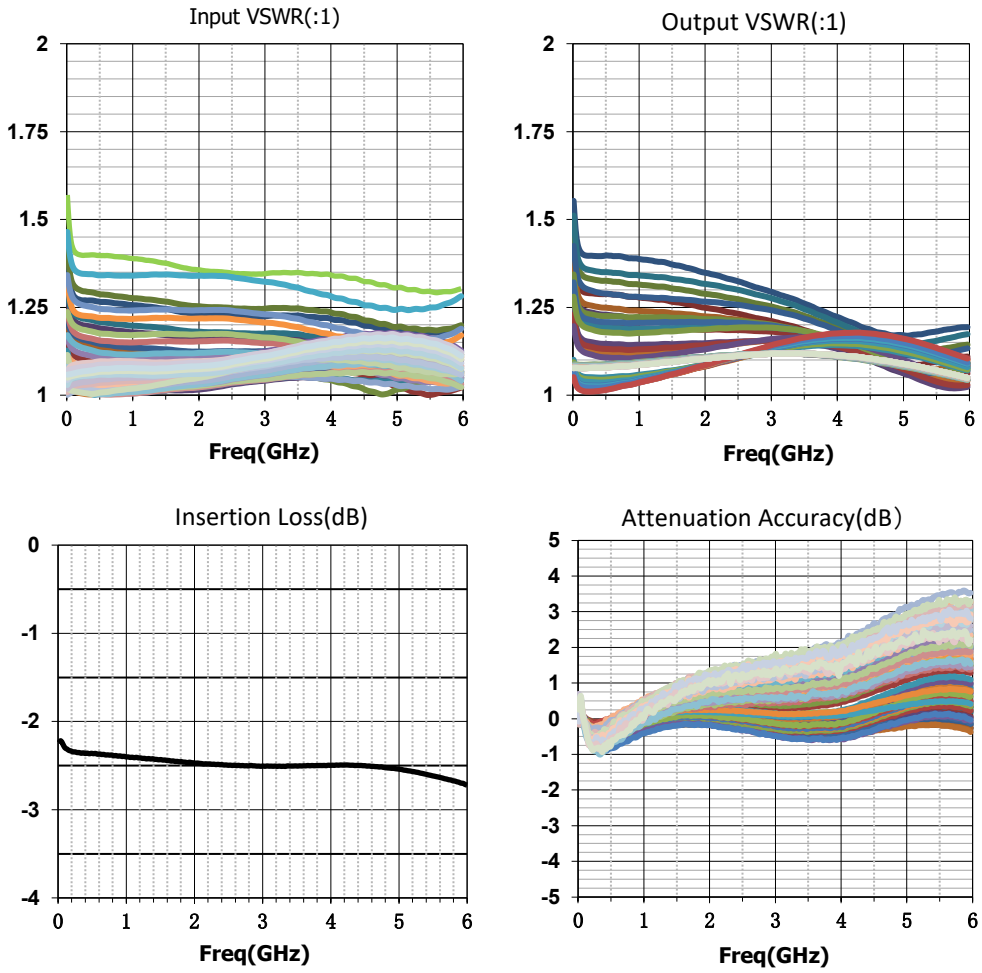
Control Voltage

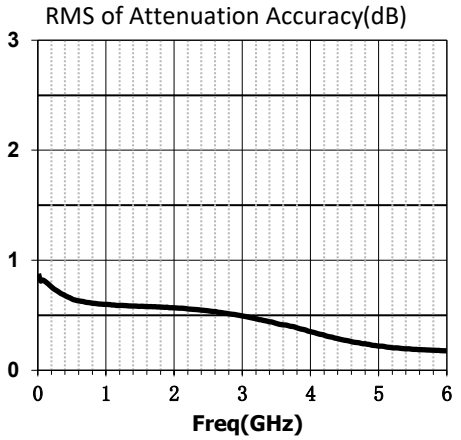
State	Bias
Low	0~ 0.3V
High	3.3~ 5V

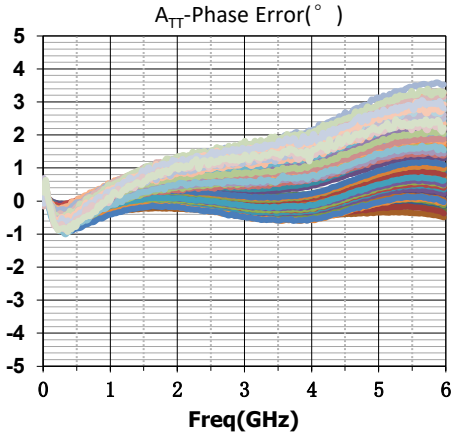
Power Supply

V_D	I_D
-5V	9mA

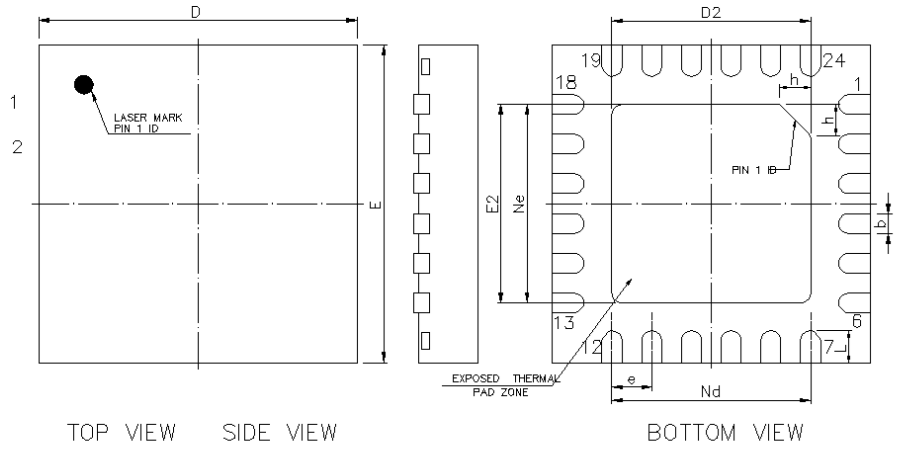
Typical Performance Curve





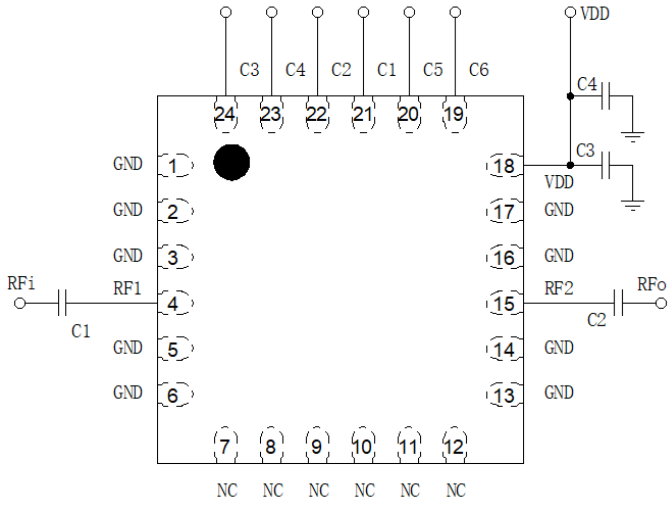


Outline Drawing
(All dimensions in mm)



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0.70	0.75	0.80
A1	--	0.02	0.05
b	0.20	0.25	0.30
c		0.203REF	
D	3.90	4.00	4.10
D2	2.40	2.50	2.60
e		0.50BSC	
Ne		2.50BSC	
Nd		2.50BSC	
E	3.90	4.00	4.10
E2	2.40	2.50	2.60
L	0.35	0.40	0.45
h	0.35	0.40	0.45

Assembly Diagram



Pin Function

Pin No.	Description	Pin No.	Description
1	Connect to GND	15	RF Output (DC Coupled)
2	Connect to GND	16	Connect to GND
3	Connect to GND	17	Connect to GND
4	RF Input (DC Coupled)	18	VDD
5	Connect to GND	19	16dB
6	Connect to GND	20	8dB
7	Connect to GND	21	0.5dB
8	Connect to GND	22	1dB
9	Connect to GND	23	4dB
10	Connect to GND	24	2dB
11	Connect to GND		
12	Connect to GND		

Components List

Reference Des.	Value	Part Number	Manuf.	Size
C1、C2、C3	39pF	—	—	0402
C4	0.1μF	—	—	1206

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