HG166SD

0.5dB LSB GaAs MMIC 6-BIT DIGITAL POSITIVE CONTROL ATTENUATOR ,12 - 18GHz

Features

Freq: 12～18GHz

0.5dB LSB Steps to 31.5dB

RMS of Attenuation Accuracy: 1dB

Insertion Loss: 3.5 dB

Supply Voltage: -5V

Control Voltage: 0/+5V

Chip Size: 1.79mm×1.25mm×0.1mm

General Description

The HG166SD is a 6-bit GaAs pHEMT digital attenuator. Covering 12 to 18 GHz, the insertion loss is 3.5 dB and the attenuator bit values are 0.5 dB, 1.0 dB, 2 dB, 4dB, 8dB, 16dB, 31.5dB for a total attenuator of 31.5 dB. RMS of Attenuation Accuracy is excellent at 1 dB. It integrates control driver function. The attenuator operates using a positive control voltage of 0/+5V to select each attenuation state and requires -5V bias supply.

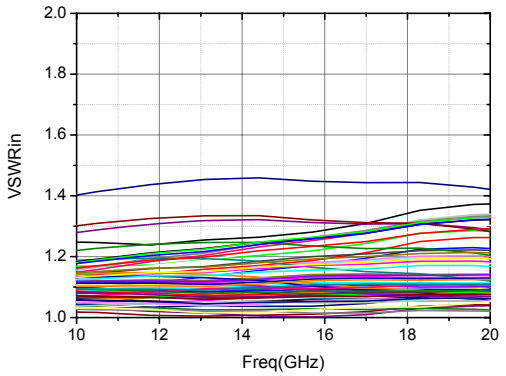
Electrical Specifications(T_A=25 ℃,Vdd= -5V)

Parameter	Min.	Typ.	Max.
Frequency Range(GHz)		12～18	
Input VSWR	-	1.3	-
Output VSWR	-	1.5	-
Insertion Loss(dB)	-	3.5	-
Attenuation Accuracy(dB)	-	-0.5～2.5	-
RMS of Attenuation Accuracy(dB)	-	1	-
Phase Variation (°)	-	-3～9	-

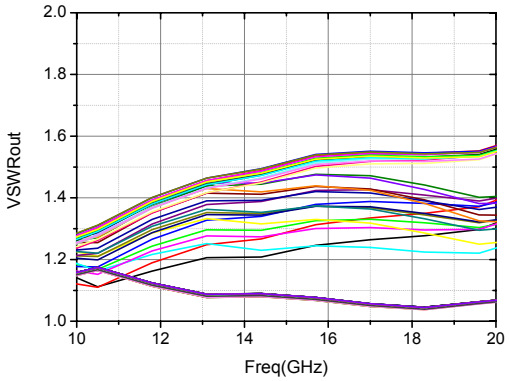
Truth Table(0：0V，1：+5V)

State	AC1	AC2	AC3	AC4	AC5	AC6
0	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

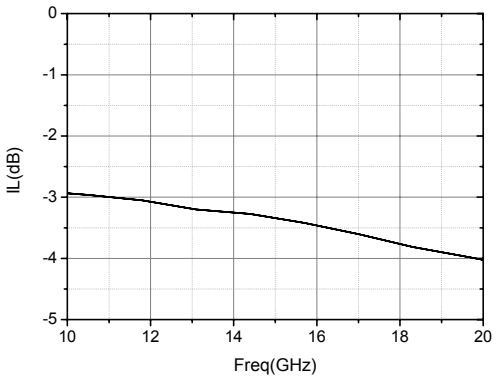
Input VSWR



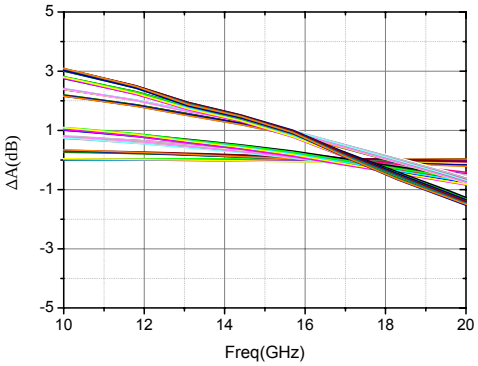
Output VSWR



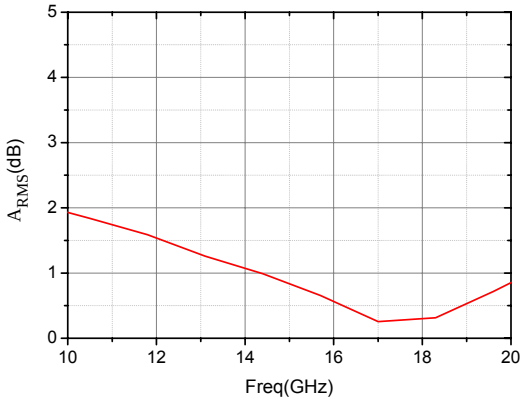
Insertion Loss



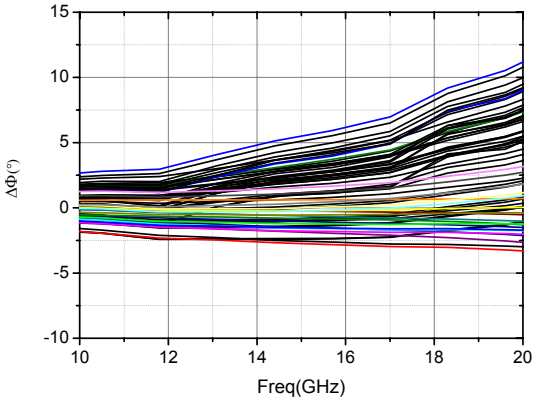
Attenuation Accuracy



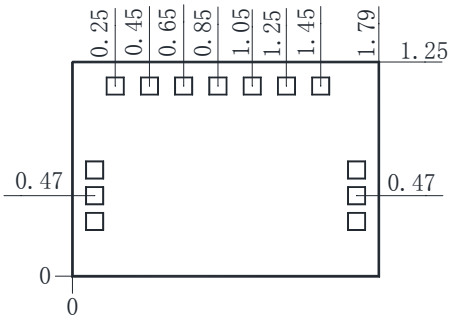
RMS of Attenuation Accuracy



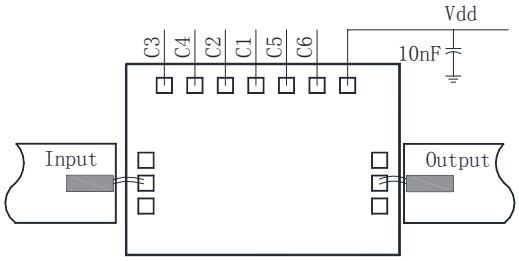
Phase Variation



Outline Drawing (mm)



Assembly Diagram



Absolute Maximum Ratings

Supply Voltage	-5.5V	
RF Input Power	+27dBm	
Control Voltage	Low Level: 0~0.5V	High Level: 3.7~5V
Operating Temperature	-55℃～125℃	
Storage Temperature	-65℃～150℃	

Notes:

1. The chip should be stored in a dry and nitrogen environment, and used in a clean environment.
2. GaAs material is brittle, can not touch the surface of the chip, must be careful when using.
3. The chip is welding with conductive adhesive or alloy (alloy temperature should not exceed 300℃, and no more than 30 sec.), and should make it fully grounded.
4. The chip microwave port and substrate gap is not exceeding 0.05mm, with Φ25μm double gold wire bonding, suggested length of gold wire 250～400μm.
5. Chip microwave port without DC blocking capacitor.
6. The chip is sensitive to static electricity, and should be protected against static electricity during storage and use.