

Features

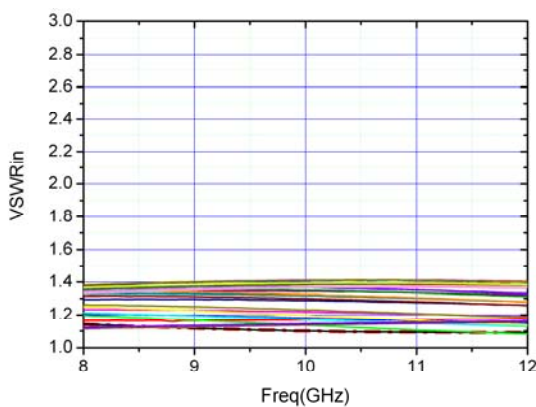
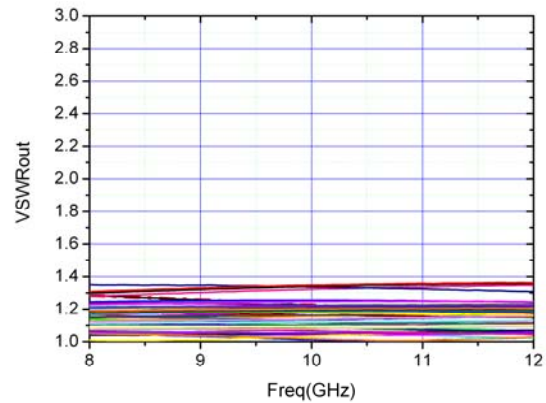
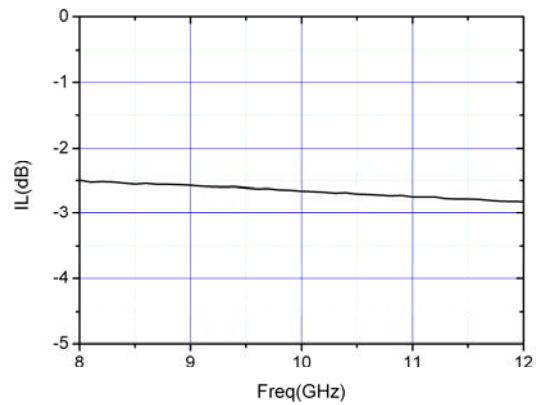
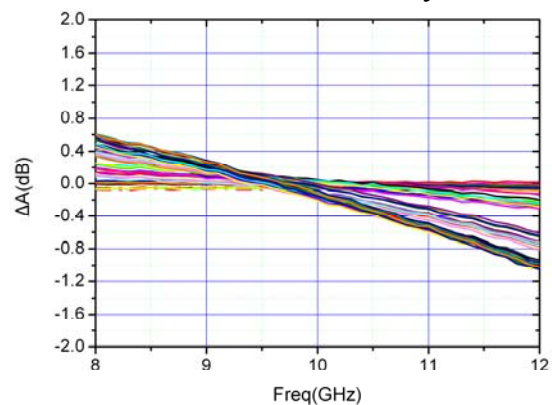
Freq: 8~12GHz
 0.5dB LSB Steps to 31.5dB
 RMS of Attenuation Accuracy: 0.5 dB
 Insertion Loss: 2.8 dB
 Control Voltage: 0/-5V
 Chip Size: 3.25mm×1.55m×0.1mm

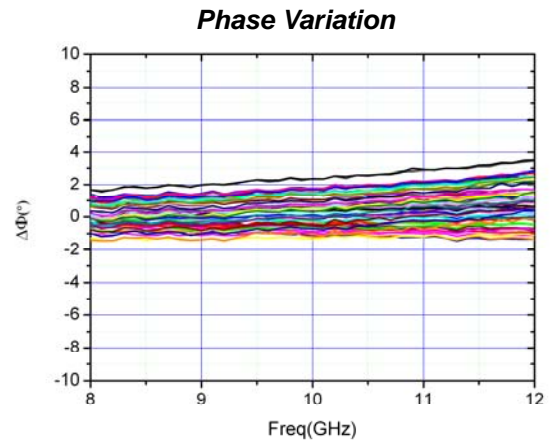
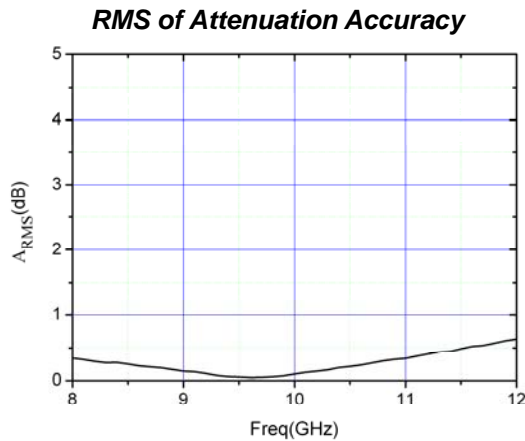
General Description

The HG165SC is a 6-bit GaAs pHEMT digital attenuator. Covering 8 to 12 GHz, the insertion loss is less than 2.8dB and the attenuator bit values are 0.5 dB, 1dB, 2 dB, 4dB, 8dB, 16dB, 31.5dB for a total attenuator of 31.5 dB. RMS of Attenuation Accuracy is excellent at 0.5 dB. The attenuator operates using a negative control voltage of 0/-5V to select each attenuation state and requires no bias supply.

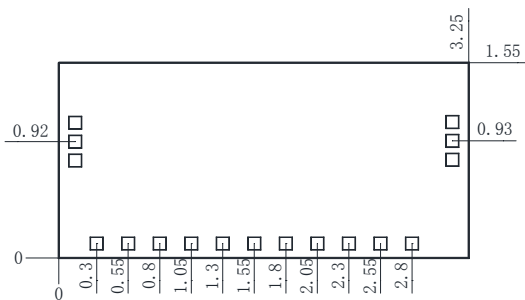
Electrical Specifications($T_A=25^\circ\text{C}$)

Parameter	Min.	Typ.	Max.
Frequency Range(GHz)	8~12		
Input VSWR	-	1.4	-
Output VSWR	-	1.3	-
Insertion Loss(dB)	-	2.8	-
Attenuation Accuracy(dB)	-	-1~0.6	-
RMS of Attenuation Accuracy(dB)	-	0.5	-
Phase Variation (°)	-	-1.5~3.5	-

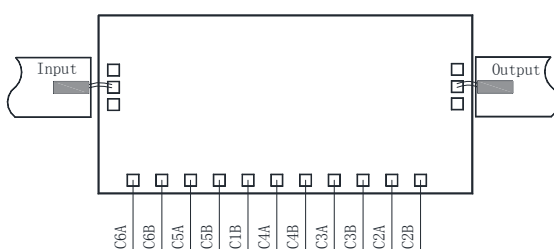
Input VSWR

Output VSWR

Insertion Loss

Attenuation Accuracy



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

State	C1B	C2A	C2B	C3A	C3B	C4A	C4B	C5A	C5B	C6A	C6B
0	1	0	1	0	1	0	1	0	1	0	1
-0.5dB	0	0	1	0	1	0	1	0	1	0	1
-1dB	1	1	0	0	1	0	1	0	1	0	1
-2dB	1	0	1	1	0	0	1	0	1	0	1
-4dB	1	0	1	0	1	1	0	0	1	0	1
-8dB	1	0	1	0	1	0	1	1	0	0	1
-16dB	1	0	1	0	1	0	1	0	1	1	0
-31.5dB	0	1	0	1	0	1	0	1	0	1	0

Outline Drawing (mm)

Absolute Maximum Ratings

Control Voltage	-5.5V
RF Input Power	+27dBm
Operating Temperature	-55°C ~ 125°C
Storage Temperature	-65°C ~ 150°C

Assembly Diagram

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°C, 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 $\Phi 25\mu\text{m}$ double gold wire bonding, suggested length of gold wire 250~400 μm .
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.