Features

Freq: 14～18GHz
360°Coverage, LSB = 5.625°
RMS Phase Error: 1°
Insertion Loss: 11dB
Supply Voltage: -5V
Control Voltage: 0/+5V
Chip Size: 3.82mm×1.24mm×0.1mm

General Description

The HG166Y is a 6-bit GaAs pHEMT digital phase shifter which is rated from 14 to 18 GHz, providing 360 degrees of phase coverage, with a LSB of 5.625 degrees. The phase shifter features very low RMS phase error of 1 degrees and insertion loss of 11 dB across all phase states. This high accuracy phase shifter is controlled with positive logic of 0/+5V, and requires -5V bias supply.

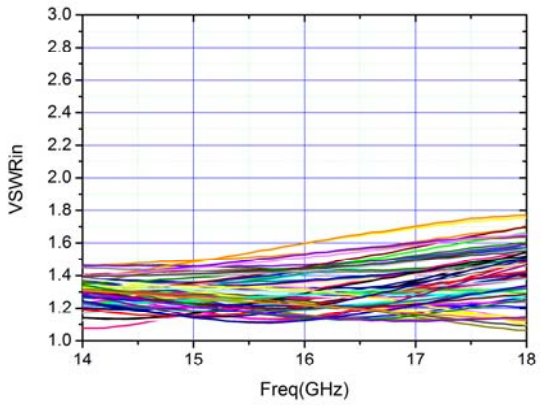
Electrical Specifications(T_A=25 ℃,Vdd= -5V)

Parameter	Min.	Typ.	Max.
Frequency Range(GHz)		14～18	
Input VSWR	-	1.5	-
Output VSWR	-	1.5	-
Insertion Loss(dB)	-	11	-
Amplitude Variation(dB)	-	±0.5	-
Phase Error(°)	-	-4~2	-
RMS Phase Error(°)	-	1	-

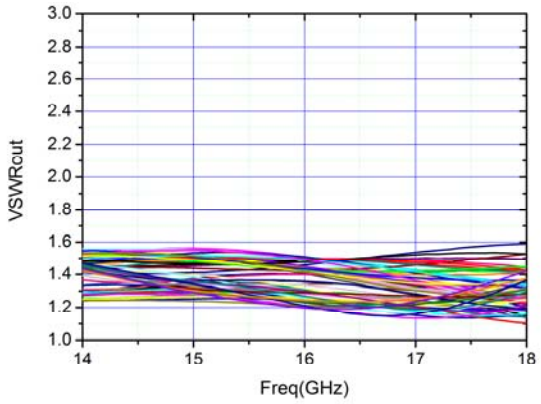
Truth Table(0: 0V，1: +5V)

State	PC1	PC2	PC3	PC4	PC5	PC6
0	0	0	0	0	0	0
-5.625°	1	0	0	0	0	0
-11.25°	0	1	0	0	0	0
-22.5°	0	0	1	0	0	0
-45°	0	0	0	1	0	0
-90°	0	0	0	0	1	0
-180°	0	0	0	0	0	1
-354.375°	1	1	1	1	1	1

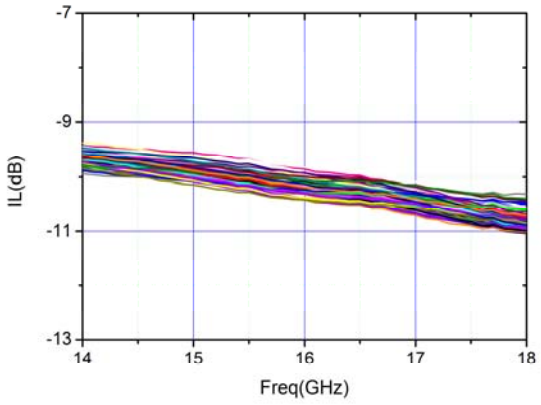
Input VSWR



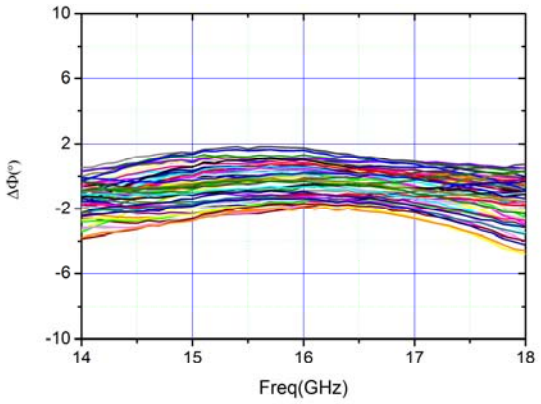
Output VSWR



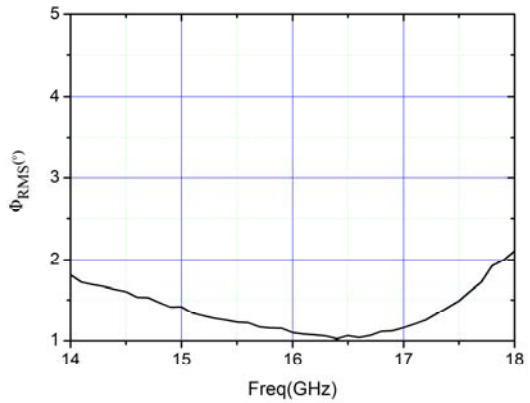
Insertion Loss



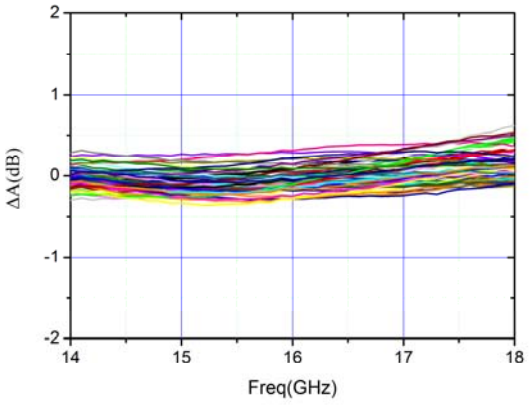
Phase Error



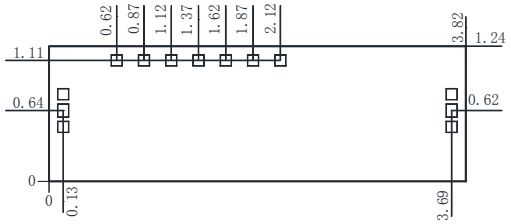
RMS Phase Error



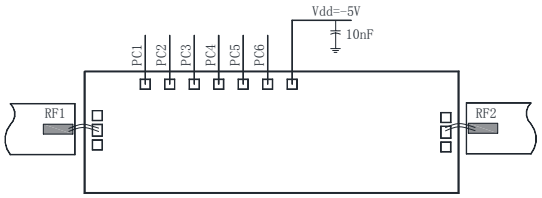
Amplitude Variation



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.