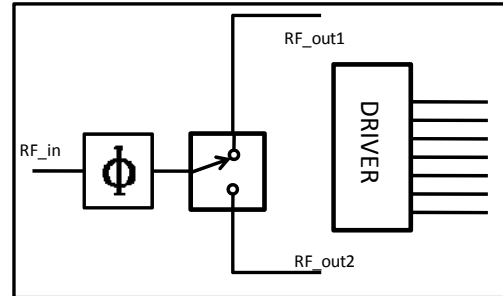


Features

- Frequency: 8.7~10GHz
- Phase Shift Step: 11.25°
- Phase Shift Bit: 5
- RMS Phase Error: 1.5°
- Insertion Loss: 7dB
- Supply Voltage: -5V
- Control Voltage: 0/+5V
- Chip Size: 2.9mm×1.22mm×0.1mm

Functional Diagram



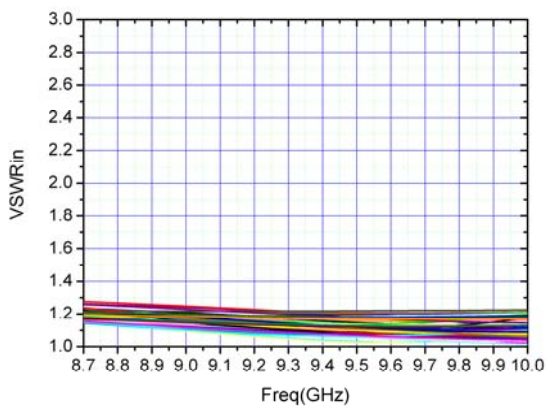
General Description

The HG125NB/HG125NB(M) is a multi-function GaAs pHEMT chip which is operating between 8.7 and 10 GHz. It includes a 5-bit digital phase shifter, switch, driver and so on.

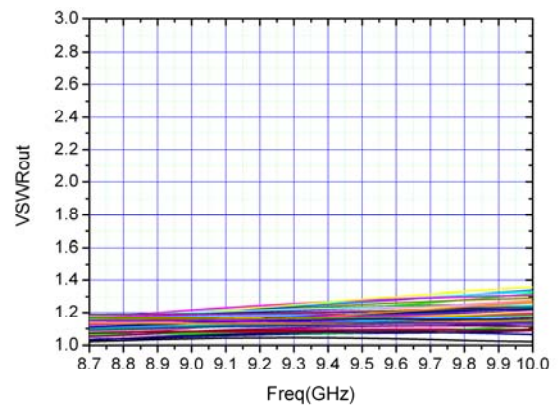
Electrical Specifications ($T_A=25^\circ\text{C}$, $V_{dd}=-5\text{V}$)

Parameter	Symbol	Unit	Min.	Typ.	Max
Frequency (GHz)	f	GHz	8.7~10		
Input VSWR	VSWR _{in}	-	—	1.2	—
Output VSWR	VSWR _{out}	-	—	1.3	—
Insertion Loss	IL	dB	—	7	—
Phase Amplitude Variation	ΔA	dB	-0.8	—	0.4
Phase Error	$\Delta\Phi$	°	-4	—	1
RMS Phase Error	Rms_pe	°	—	1.5	—
Isolation	ISO	dB	52	—	—

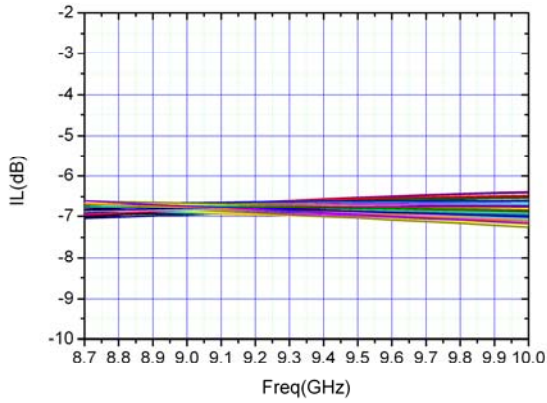
Input VSWR



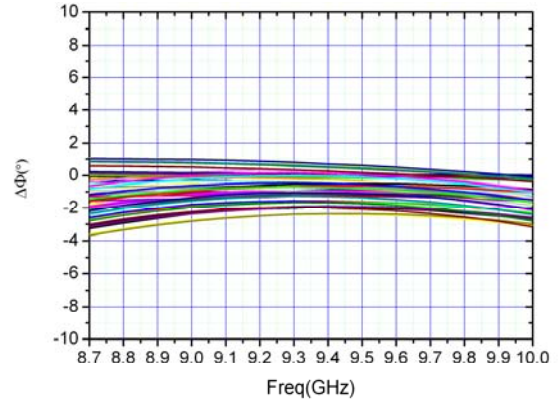
Output VSWR



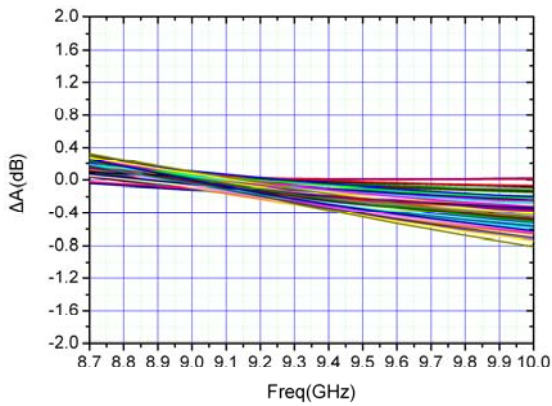
Insertion Loss



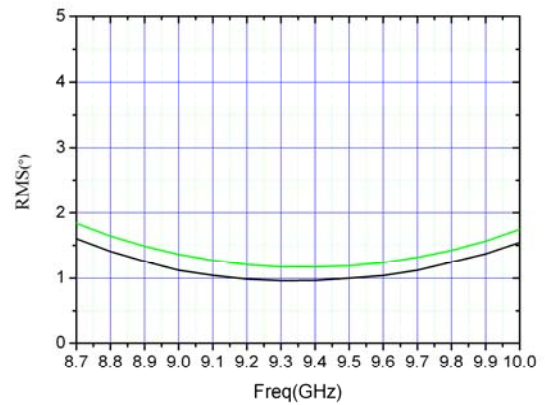
Phase Error



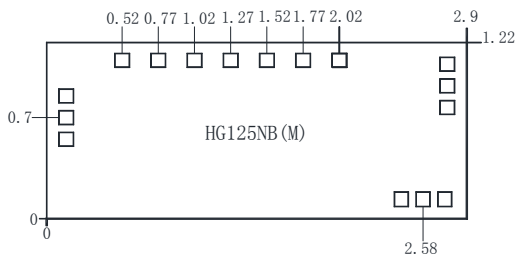
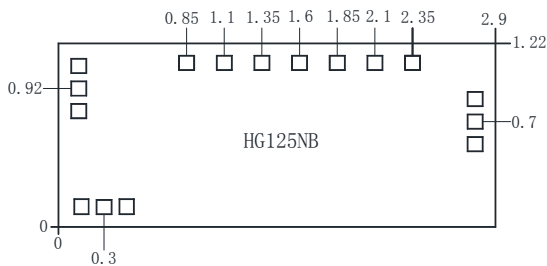
Phase Amplitude Variation



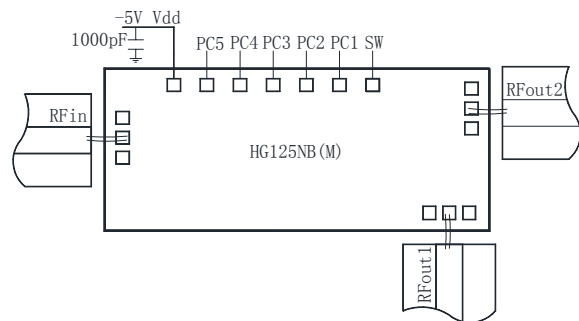
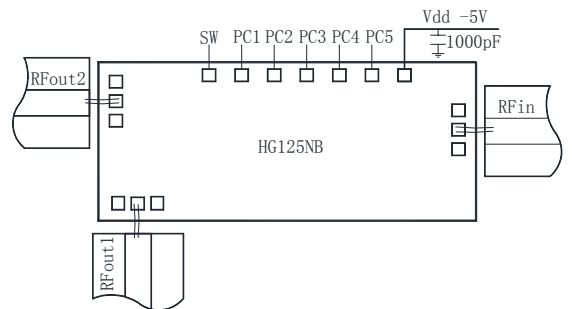
RMS Phase Error



Outline Drawing (mm)



Assembly Diagram



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

SW	RFin-RFout2	RFin-RFout1
0	ON	OFF
1	OFF	ON

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

State	PC1	PC2	PC3	PC4	PC5
0	0	0	0	0	0
-11.25°	1	0	0	0	0
-22.5°	0	1	0	0	0
-45°	0	0	1	0	0
-90°	0	0	0	1	0
-180°	0	0	0	0	1
-348.75°	1	1	1	1	1

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°C ~ 125°C	
Storage Temperature	-65°C ~ 150°C	

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 Φ25μm double gold wire bonding, suggested length of gold wire 250~400μm.
5. Only chip microwave input port RFin with a DC blocking capacitor.
6. The chip is sensitive to static electricity, and should be protected against static electricity during storage and use.