

## GaAs PIN Reflective SP4T Switch Chip, 10-40GHz

### Performance characteristics

- Frequency Range: 10-40GHz
- Insertion loss : 1.2dB typ.
- Isolation: 42 dB typ.
- P-1dB: 24dBm @17GHz
- 50Ohm input / output
- 100% on-wafer testing
- Chip size: 2.12 x 1.52 x 0.1mm
- Silicon nitride passivation, scratch protection

### Product Introduction

GSW4B2 is a GaAs PIN reflective single-pole four-throw switch chip, 50Ω matching at input/output , frequency range covering 10~40GHz , -5V /+5V control. Built-in bias network and DC blocking capacitor , easy to use. Excellent switching characteristics and port standing wave characteristics in the entire operating frequency range, very suitable for microwave hybrid integrated circuits, multi-chip modules and low-power systems. The switch chip uses on-chip through-hole metallization process to ensure good grounding, no additional grounding measures are required, and it is simple and convenient to use. The back of the chip is metallized, suitable for eutectic sintering or conductive adhesive bonding process.

Use restriction parameter <sup>1</sup>	
Maximum input voltage	2.5V
Maximum input power	+31Bm CW
Operating temperature	-55 ~ +85°C
storage temperature	-65 ~ +150°C

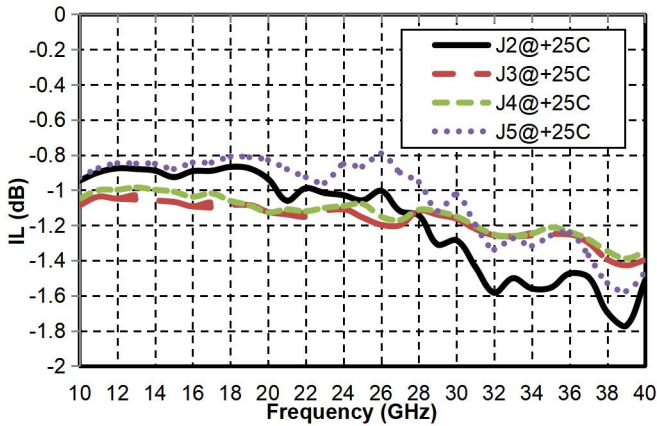
【1】 Exceeding any of these maximum limits may cause permanent damage.

Electrical performance parameters ( TA = +25°C)				
index	Minimum	Typical Value	Maximum	unit
Frequency Range	10-40			G Hz
Insertion loss	-	1.2	1.8	dB
Isolation	33	42	-	dB
Input return loss	9	12	-	dB
Output return loss	9	16	-	dB
P-1dB @17GHz	-	24	-	dBm
Switching speed	-	30	-	ns

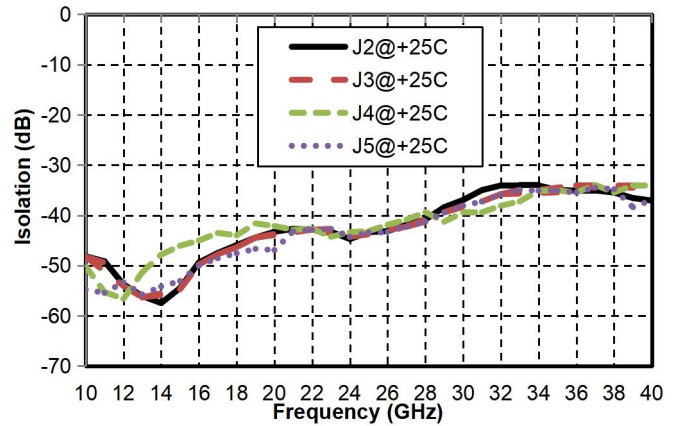
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### Main index test curve

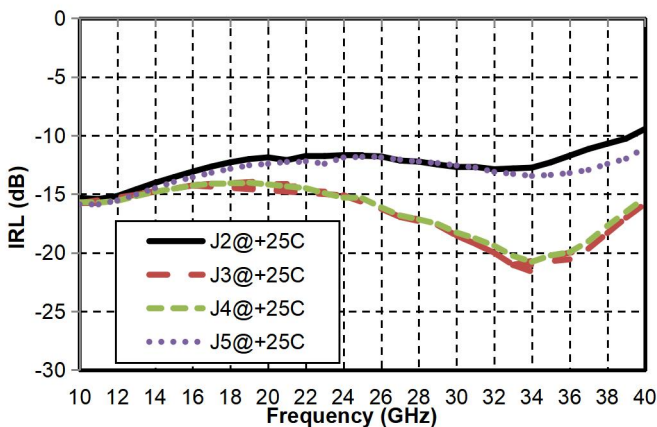
Insertion Loss vs. Operating Frequency



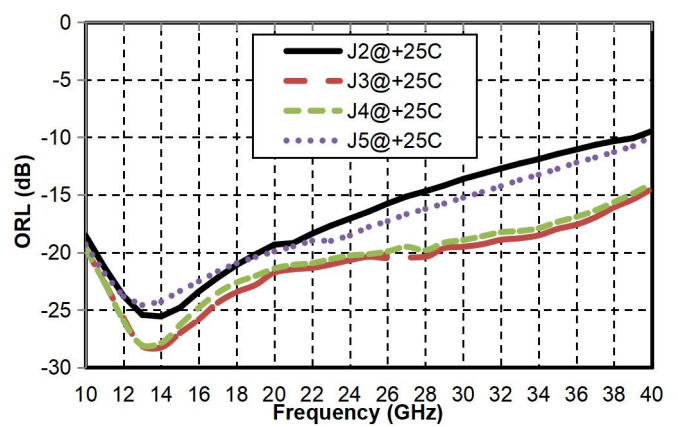
Isolation vs. Operating Frequency



Input Return Loss vs. Frequency



Output Return Loss vs. Frequency



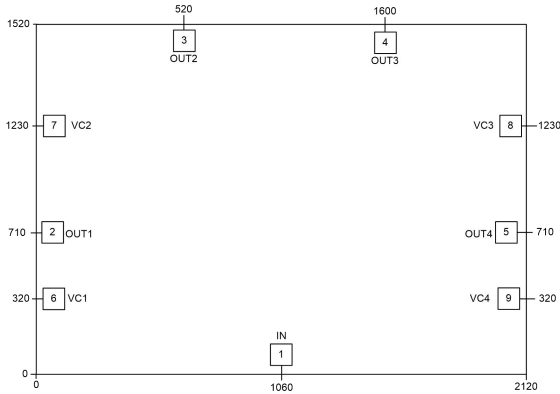
### Typical Driver Connections

CONTROL LEVEL (DC CURRENT)				RF OUTPUT STATE			
VC1	VC2	VC3	VC4	J2-J1	J3-J1	J4-J1	J5-J1
-10mA	+12mA	+12mA	+12mA	Low Loss	Isolation	Isolation	Isolation
+12mA	-10mA	+12mA	+12mA	Isolation	Low Loss	Isolation	Isolation
+12mA	+12mA	-10mA	+12mA	Isolation	Isolation	Low Loss	Isolation
+1 2 mA	+1 2 mA	+1 2 mA	-10mA	Isolation	Isolation	Isolation	Low Loss

Note:  $V \approx +1.32V$ ,  $I \approx +12mA$ ;  $V \approx -1.90V$ ,  $I \approx -10mA$  (including J1 end  $R_{IN} \approx 50 \text{ ohm}$  resistor voltage divider)

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### Appearance structure

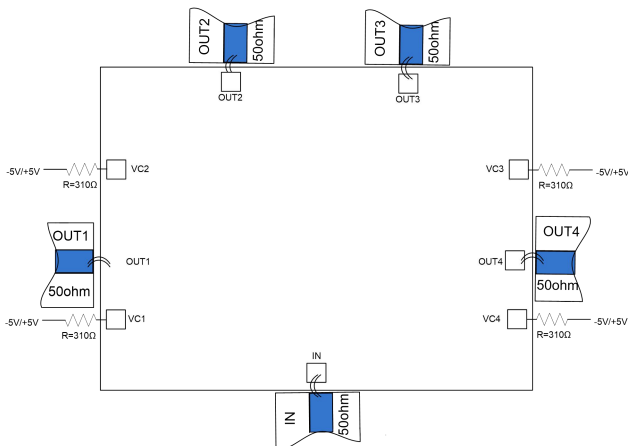


All units in the figure are micrometers

### Bonding point definition

Bonding point number	Function Symbol	Functional Description
1 ,	IN(J1)	RF input signal terminal
2, 3, 4, 5	OUT1(J2), OUT2(J3), OUT3(J4), OUT4(J5)	RF output signal terminal
6, 7, 8, 9	VC1, VC2, VC3, VC4	Signal control terminal
Chip bottom	GND	The bottom of the chip needs to be well grounded to RF and DC

### Recommended circuit diagram



+5V series  $R \approx 310$  ohm resistor,  $V \approx +1.32V$ ,  $I \approx +12mA$ ; -5V series  $R \approx 310$  ohm resistor,  $V \approx -1.90V$ ,  $I \approx -10mA$ . Users can change the resistance value according to their own situation. If you have any questions, please contact the manufacturer.