

## GaAs PIN Reflective SP4T Switch Chip, 2-26GHz

### Performance characteristics

- Frequency range: 2-26GHz
- Insertion loss : 1.3dB typ.
- Isolation: 52 dB typ.
- P-1dB: See the table below
- 50Ohm input / output
- 100% on-wafer testing
- Chip size: 2.77 x 2.27 x 0.1mm
- Silicon nitride passivation, scratch protection

### Product Introduction

GSW410A is a GaAs PIN reflective single-pole four-throw switch chip with 50Ω matching at the input/output ends , a frequency range of 2 ~ 26 GHz , and -5V/+5V control. It has a built-in bias network and DC blocking capacitors , making it easy to use.

Use restriction parameter <sup>1</sup>	
Maximum input voltage	2.5V
Maximum input power	+37dBm CW
Operating temperature	-55 ~ +85°C
storage temperature	-65 ~ +150°C

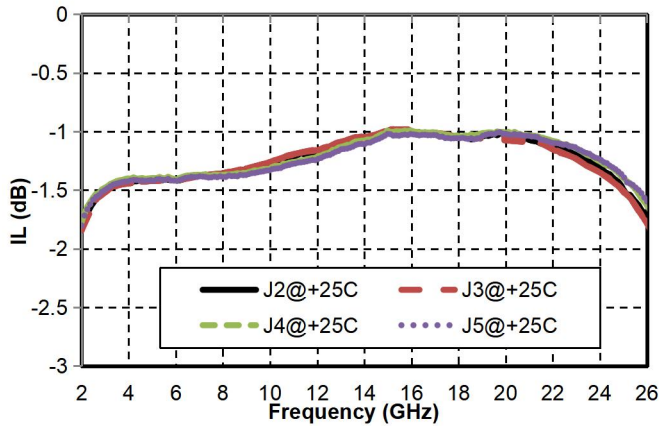
【1】 Exceeding any of these maximum limits may cause permanent damage.

Electrical performance parameters ( TA ≈ +25°C)				
index	Minimum	Typical Value	Maximum	unit
Frequency Range	2-26			GHz
Insertion loss	-	1.2	-	dB
Isolation	-	52	-	dB
Input return loss	-	19	-	dB
Output return loss	-	11	-	dB
P-1dB	-	27.0@2GHz	-	dBm
	-	28.5@4GHz	-	dBm
	-	30.0@8GHz	-	dBm
	-	30.5@12GHz	-	dBm
	-	29.0@16GHz	-	dBm
	-	27.0@20GHz	-	dBm
Switching speed	-	20	-	ns

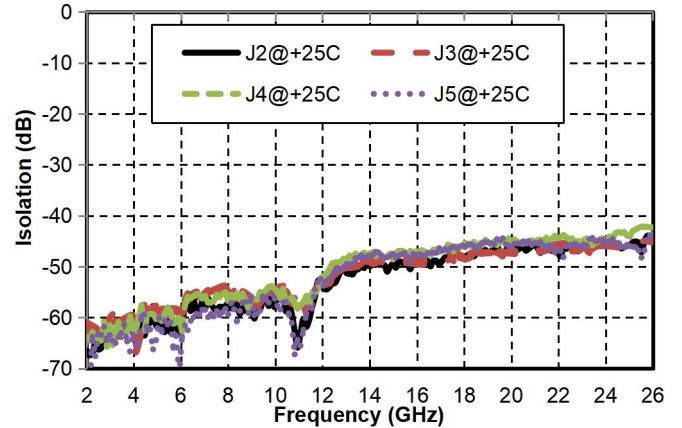
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### Main index test curve

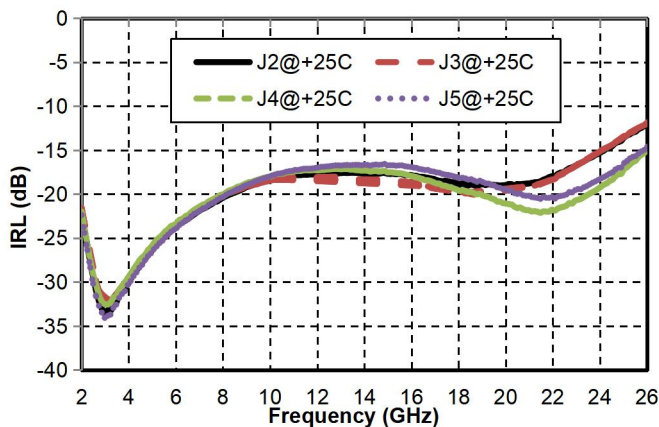
Insertion Loss vs. Operating Frequency



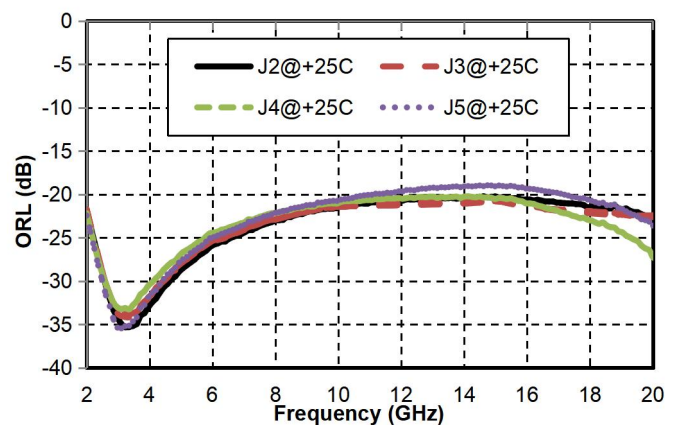
Isolation vs. Operating Frequency



Input Return Loss vs. Frequency



Output Return Loss vs. Frequency



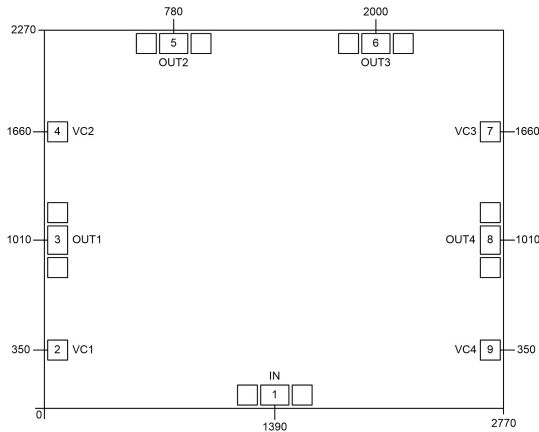
### Typical Driver Connections

CONTROL LEVEL (DC CURRENT)				RF OUTPUT STATE			
VC1	VC2	VC3	VC4	J2-J1	J3-J1	J4-J1	J5-J1
-10mA	+ 15 mA	+ 15 mA	+ 15 mA	Low Loss	Isolation	Isolation	Isolation
+15mA	-10mA	+13mA	+15mA	Isolation	Low Loss	Isolation	Isolation
+15mA	+15mA	-10mA	+15mA	Isolation	Isolation	Low Loss	Isolation
+15mA	+ 15 mA	+ 15 mA	-10mA	Isolation	Isolation	Isolation	Low Loss

Note :  $V \approx +2.6V$ ,  $I \approx +1.0mA$ ;  $V \approx -3.3V$ ,  $I \approx -1.5mA$  (including J1 end on-chip resistor  $R_{IN} \approx 50\ \Omega$  voltage divider)

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### Appearance structure

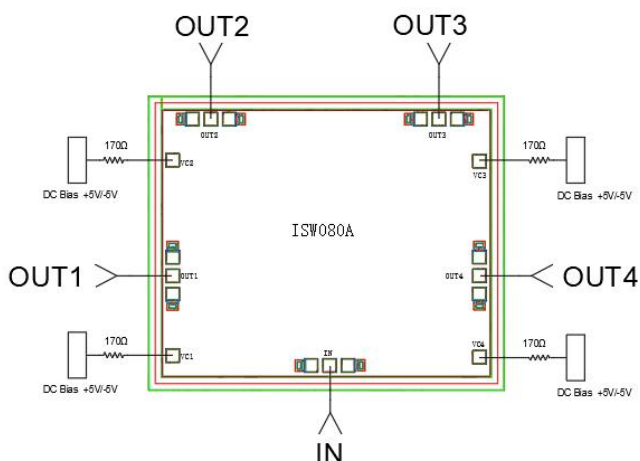


All units in the figure are micrometers

### Bonding point definition

Bonding point number	Function Symbol	Functional Description
1 ,	IN(J1)	RF input signal terminal
3, 5, 6, 8	OUT1(J2), OUT2(J3), OUT3(J4), OUT4(J5)	RF output signal terminal
2, 4, 7, 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 is connected in series with  $R \approx 170$  ohm resistor ,  $V \approx +2.6V$  ,  $I \approx +15mA$  . -5V is connected in series with  $R \approx 170$  ohm resistor ,  $V \approx -3.3V$  ,  $I \approx -10mA$  .