

GaAs PIN Reflective SP6T Switch Chip, 0.1-40GHz

Performance characteristics

- Frequency range: 0.1-40GHz
- Insertion loss : 1.2dB typ.
- Isolation: 53 dB typ.
- P-1dB: 30dBm @17GHz
- 50Ohm input / output
- 100% on-wafer testing
- Chip size: 2.32 x 1.52 x 0.1mm
- Silicon nitride passivation, scratch protection

Product Introduction

GSW6 is a GaAs PIN reflective single-pole six-throw switch chip with 50Ω matching at the input/output ends, a frequency range of 0.1 to 40GHz , and -5/+5V control. It has excellent switching characteristics and port standing wave characteristics in the entire operating frequency range, and is very suitable for microwave hybrid integrated circuits, multi-chip modules, and low-power systems. The switch chip uses on-chip through-hole metallization technology to ensure good grounding, does not require additional grounding measures, and is simple and convenient to use. The back of the chip is metallized and is suitable for eutectic sintering or conductive adhesive bonding processes.

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

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

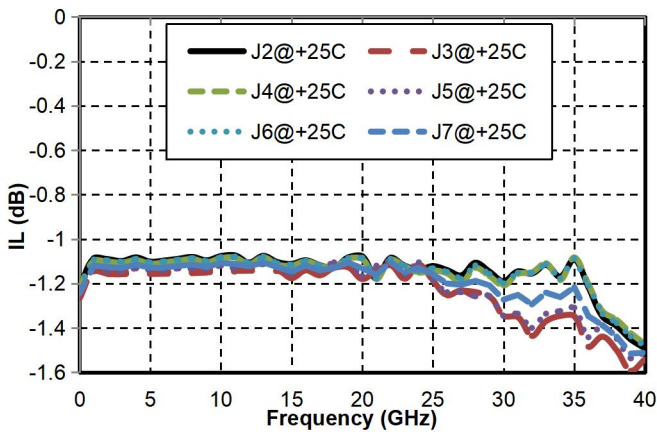
Electrical performance parameters (TA = +25°C)				
index	Minimum	Typical Value	Maximum	unit
Frequency Range	0.1-18			G Hz
Insertion loss	-	1.1	1.2	dB
Isolation	48	66	-	dB
Input return loss	17	19	-	dB
Output return loss	16	18	-	dB
Frequency Range	18-40			G Hz
Insertion loss	-	1.2	1.5	dB
Isolation	36	42	-	dB
Input return loss	19	24	-	dB
Output return loss	17	21	-	dB

P-1dB @17GHz	-	30	-	dBm
Switching speed	-	20	-	ns

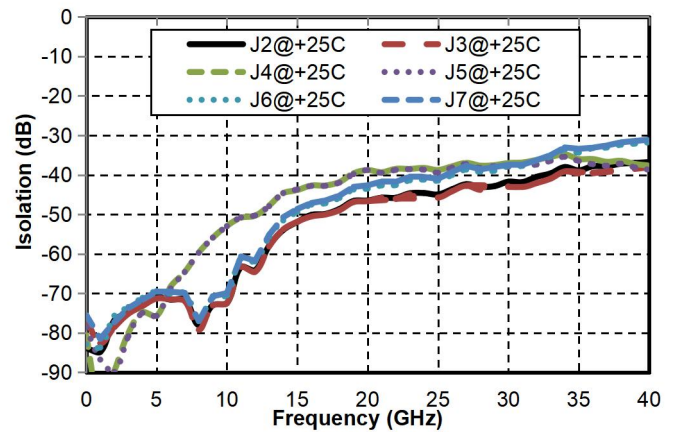
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Main index test curve

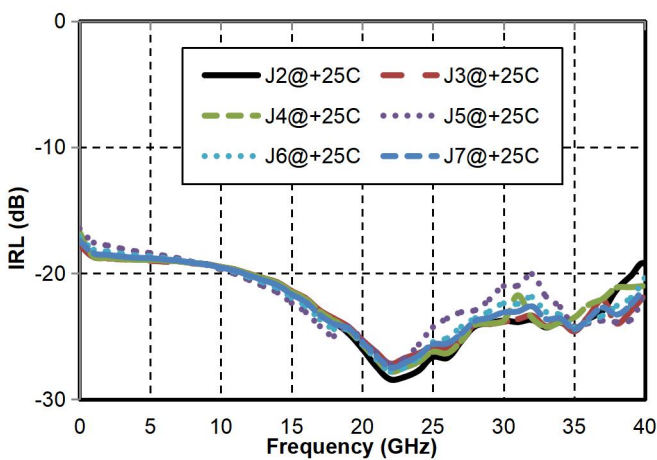
Insertion Loss vs. Operating Frequency



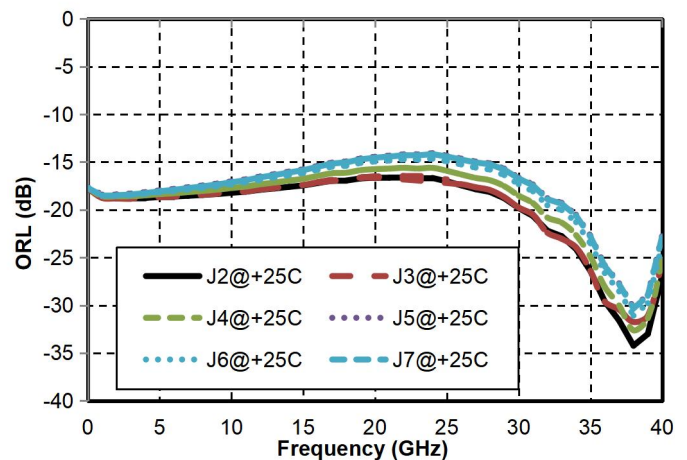
Isolation vs. Operating Frequency



Input Return Loss vs. Frequency



Output Return Loss vs. Frequency



Typical Driver Connections

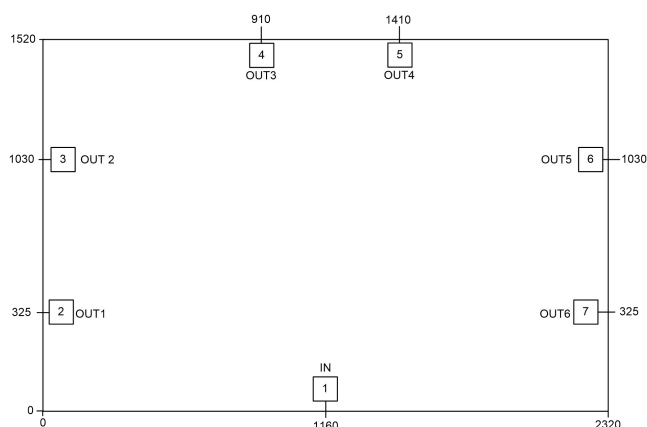
Control Port						Output conduction condition					
J2	J3	J4	J5	J6	J7	J2-J1	J3-J1	J4-J1	J5-J1	J6-J1	J7-J1
-10mA	+20mA	+20mA	+20mA	+20mA	+20mA	Continuity	isolation	isolation	isolation	isolation	isolation
+20mA	-10mA	+20mA	+20mA	+20mA	+20mA	isolation	Continuity	isolation	isolation	isolation	isolation
+20mA	+20mA	-10mA	+20mA	+20mA	+20mA	isolation	isolation	Continuity	isolation	isolation	isolation

+20mA	+20mA	+20mA	-10mA	+20mA	+20mA	isolation	isolation	isolation	Continuity	isolation	isolation
+20mA	+20mA	+20mA	+20mA	-10mA	+20mA	isolation	isolation	isolation	isolation	Continuity	isolation
+20mA	+20mA	+20mA	+20mA	+20mA	-10mA	isolation	isolation	isolation	isolation	isolation	Continuity

+5V /-5V need to be connected in series with resistors of different resistance values , +5V is connected in series with R= 25 ohm resistor ; -5V is connected in series with R= 300 ohm resistor .

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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)	A DC blocking capacitor is required at the RF input signal end
2, 3, 4, 5, 6, 7	OUT1(J2), OUT2(J3), OUT3(J4), OUT4(J5) OUT5(J6), OUT6(J7)	The RF output signal terminal needs to be equipped with a DC blocking capacitor
Chip bottom	GND	The bottom of the chip needs to be well grounded to RF and DC

Recommended circuit diagram

