Standard Circuit

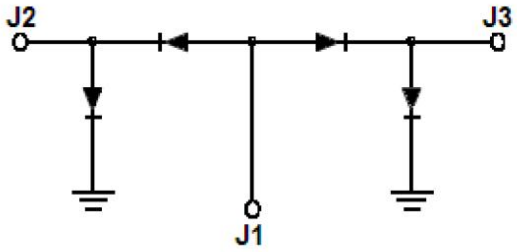
GSW2A

GaAs PIN Reflective Single-pole Double-throw Switch Chip, 0.1-40GHz

Performance characteristics

- Frequency range: 0.1-40 GHz
- Insertion loss : 0.9dB typ.
- Isolation: 52 dB typ.
- P-1dB：26dBm @17GHz
- 50Ohm input / output
- 100% on-wafer testing
- Chip size: 2.32 x 0.87 x 0.1mm
- Silicon nitride passivation, scratch protection

Functional block diagram



Product Introduction

GSW2A is a GaAs PIN reflective single-pole double-throw high-isolation switch chip with 50Ω matching at the input/output ends, a frequency range of 0.1 to 40GHz, and -5V/+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	-	0.7	0.8	dB
Isolation	50	58	-	dB
Input return loss	17	19	-	dB
Output return loss	22	25	-	dB
Frequency Range	18-40			G Hz
Insertion loss	-	1.0	1.1	dB
Isolation	46	48	-	dB
Input return loss	16	20	-	dB
Output return loss	12	17	-	dB
P-1dB @17GHz	-	26	-	dBm
Switching speed	-	20	-	ns

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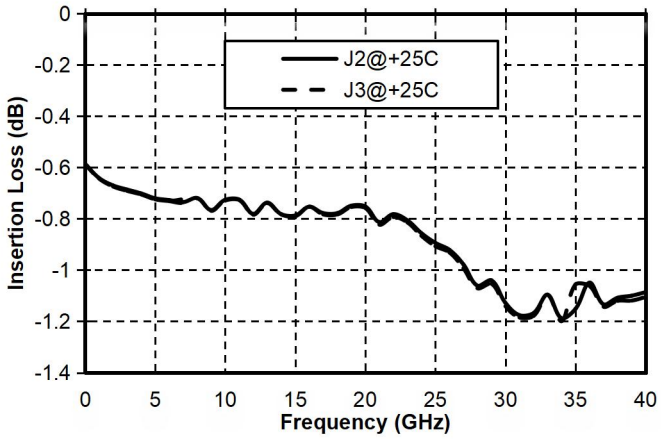
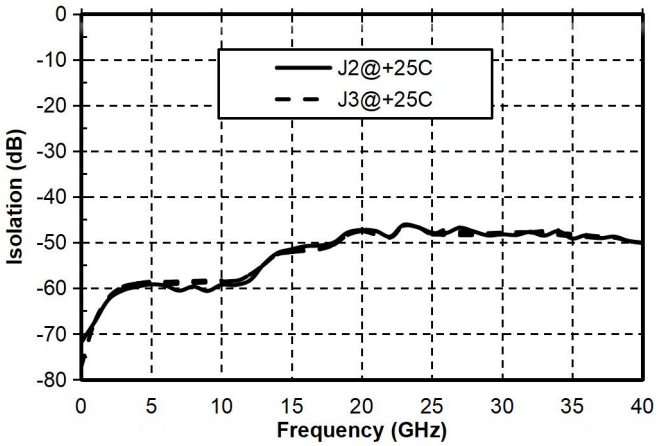
Main index test curve

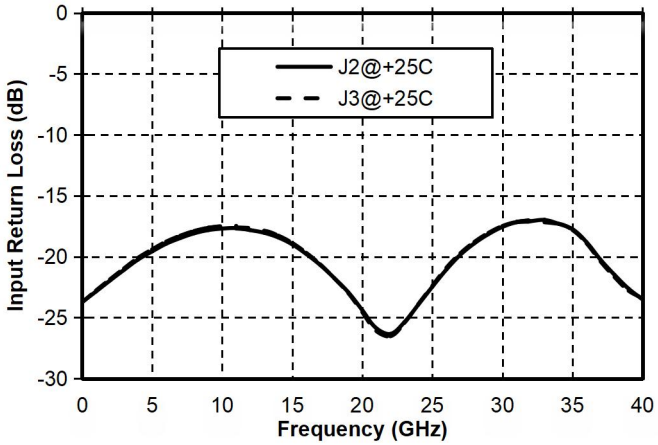
Insertion Loss vs. Operating Frequency



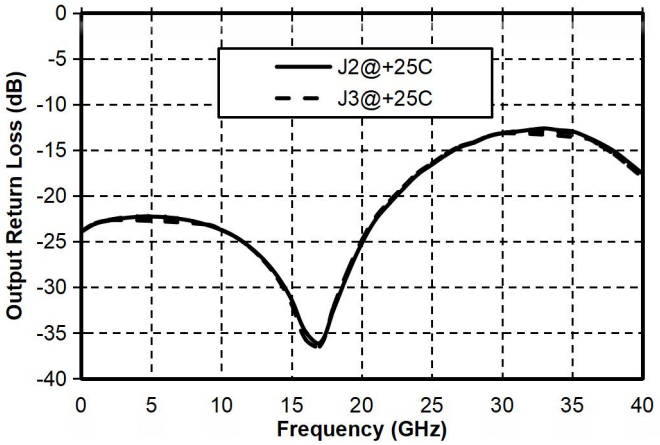
Isolation vs. Operating Frequency



Input Return Loss vs. Frequency



Output Return Loss vs. Frequency



Typical Driver Connections

CONTROL LEVEL (DC CURRENT)		RF OUTPUT STATE	
J2	J 3	J2-J1	J3 - J1
-10mA	+1 2mA	Low Loss	Isolation
+ 12mA	-10mA	Isolation	Low Loss
Note: V ≈ +1.28V, I ≈ +12mA; V ≈ -1.80V, I ≈ -10mA (including RIN=50Ω resistor voltage divider at J1)			

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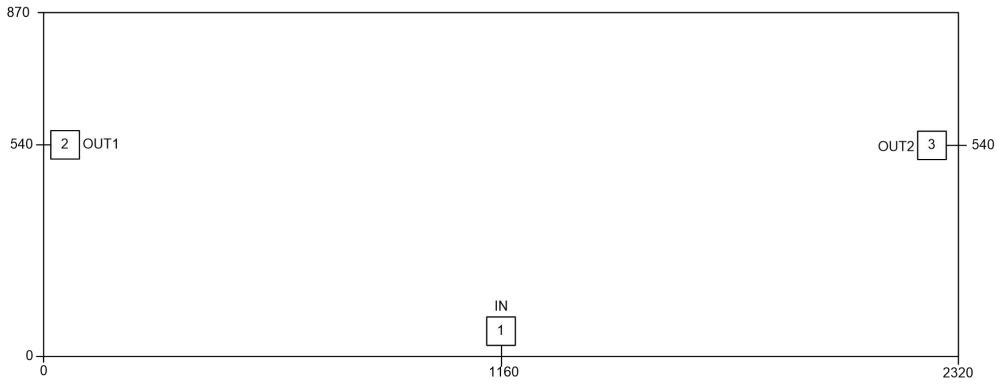
Appearance structure

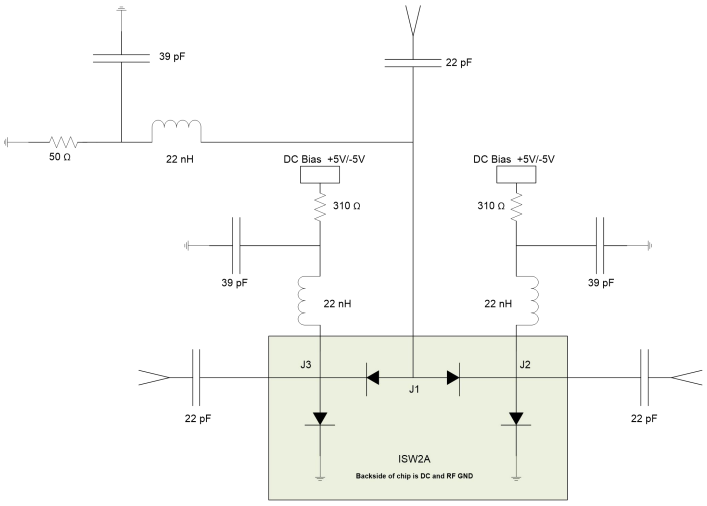


All units in the figure are micrometers

Bonding point definition

Bonding point number	Function Symbol	Functional Description
1	IN(J1)	RF input signal terminal
2.3	OUT2(J2), OUT3(J3)	RF output signal terminal
Chip bottom	GND	The bottom of the chip needs to be well grounded to RF and DC

Recommended use



+5V series R ≈ 310 ohm resistor, V ≈ +1.28V, I ≈ +12mA; -5V series R ≈ 310 ohm resistor, V ≈ -1.80V, I ≈ -10mA. Users can change the resistance value according to their own situation. If you have any questions, please contact the manufacturer.