Standard Circuit

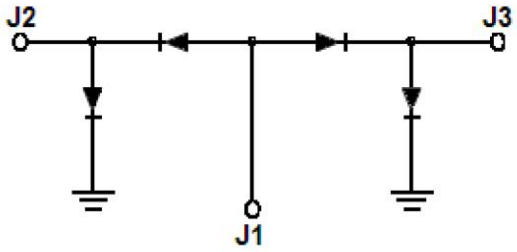
GSW2B

GaAs PIN Reflective Single-pole Double-throw Switch Chip, 0.05-50GHz

Performance characteristics

- Frequency range: 0.05 - 50 GHz
- Insertion loss : 0.7dB typ.
- Isolation: 46 dB typ.
- P-1dB: See the table below
- 50Ohm input / output
- 100% on-wafer testing
- Chip size: 1.27 x 0.78 x 0.1mm
- Silicon nitride passivation, scratch protection

Functional Block Diagram



Product Introduction

GSW2B is a GaAs PIN reflective single-pole double-throw switch chip, input/output end 50Ω matching, frequency range covers 0.05～50GHz , and adopts -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 process to ensure good grounding, does not require additional grounding measures, and is simple and convenient to use. The back of the chip is metallized, which is suitable for eutectic sintering or conductive adhesive bonding process.

Use restriction parameter [1]	
Maximum input voltage	2 5V
Maximum input power	+36dBm 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		0.05-50		GHz
Insertion loss	-	0.7	-	dB
Isolation	-	46	-	dB
Input return loss	-	18	-	dB
Output return loss	-	20	-	dB
P-1dB	-	25.0@1GHz	-	dBm
		27.0@2GHz		dBm
		28.5@4GHz		dBm
		30.5@8GHz		dBm
		31.5@12GHz		dBm
		29.0@20GHz		dBm
Switching speed	-	20	-	ns

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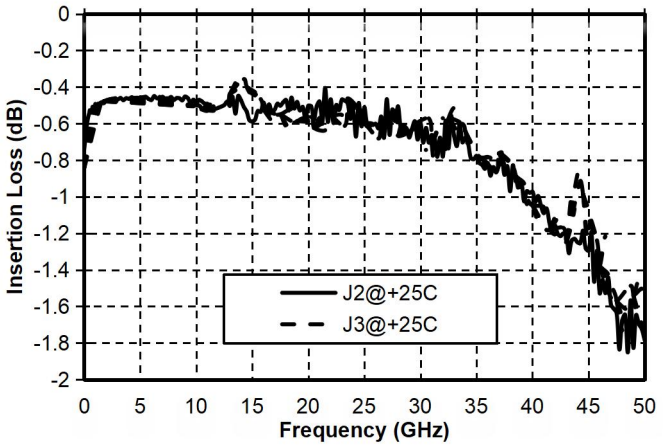
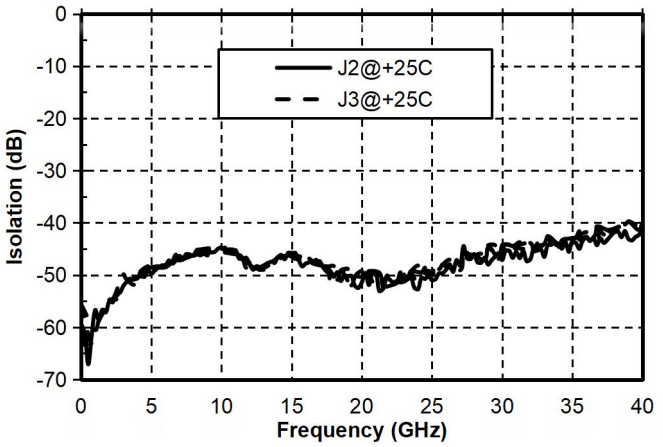
Main index test curve

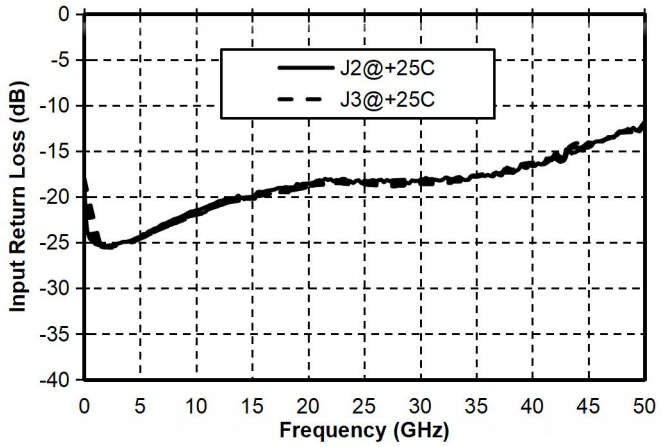
Insertion Loss vs. Operating Frequency



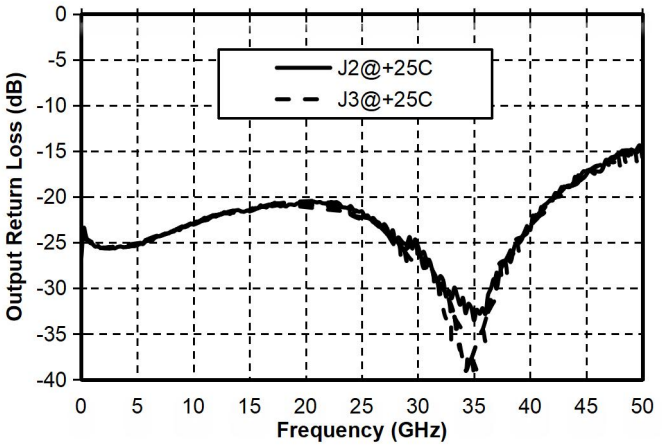
Isolation vs. Operating Frequency



Input Return Loss vs. Frequency



Output Return Loss vs. Frequency



Typical Driver Connections

CONTROL LEVEL (DC CURRENT)		RF OUTPUT STATE	
J2	J 3	J2-J1	J3 - J1
-10mA	+15 mA	Low Loss	Isolation
+1 5 mA	-10mA	Isolation	Low Loss
Note: V ≈ + 2.5 V, I ≈ +1 5 mA; V ≈ -3 . 1 V, I ≈ -10 mA (including J1 end RIN = 50 ohm resistor voltage divider)			

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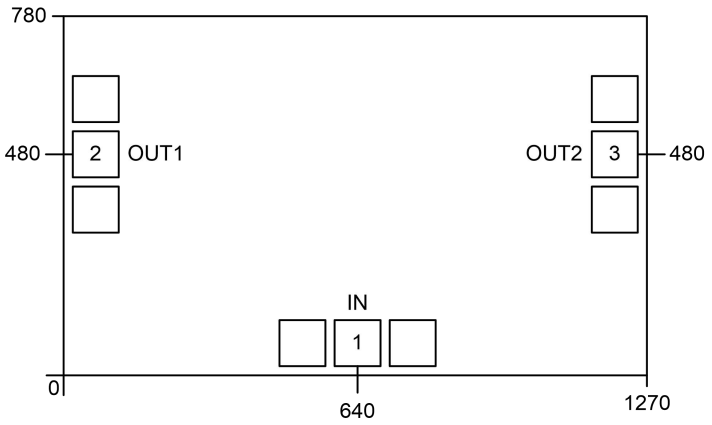
Appearance structure



All units in the figure are micrometers

Bonding point definition

Bonding point number	Function Symbol	Functional Description
1	IN(J1)	A DC blocking capacitor is required at the RF input signal end
2.3	OUT2(J2), OUT3(J3)	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

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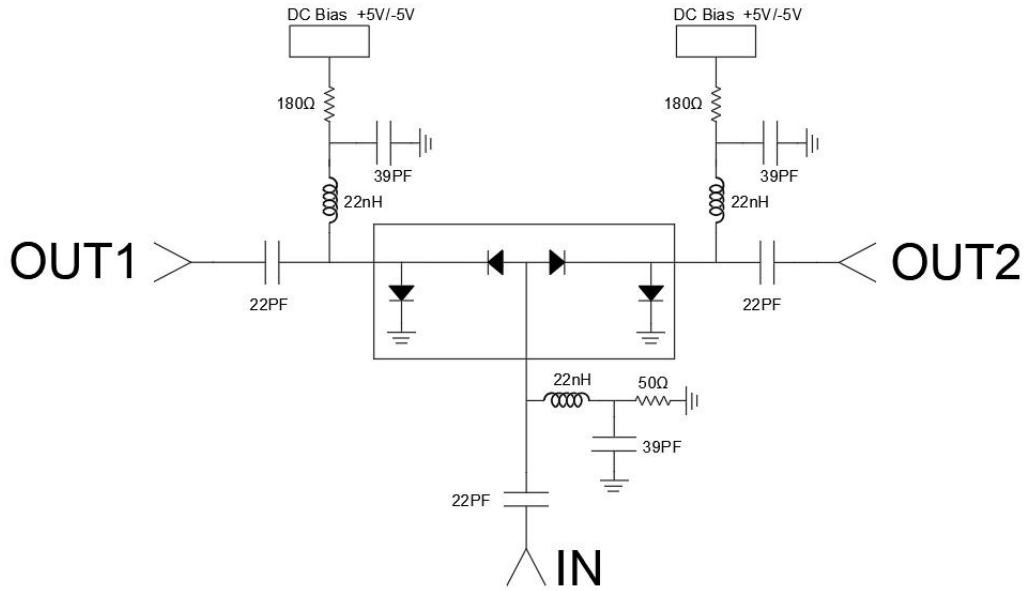

+5V series R ≈ 1 80 ohm resistor, V ≈ + 2.5 V, I ≈ +1 5 mA; -5V series R ≈ 1 80 ohm resistor, V ≈ -3 . 1V, I ≈ -10mA. Users can change the resistance value according to their own situation. If you have any questions, please contact the manufacturer.