GSW-00066T-PD

GaAs MMIC Single Pole Six Throw Switch Chip, DC-6GHz

Performance characteristics

- Frequency range: DC -6GHz
- Insertion loss : 1.5 dB @ 6 GHz
- Isolation: 50dB
- On- state VSWR : 1.2
- Integrated logic control
- 50Ohm input / output
- 100% on-wafer testing
- Chip size: 2.66 x 2.68 x 0.1mm

Product Introduction

GSW-00066T-PD is a GaAs MMIC single-pole six-throw switch chip with 50Ω matching at the input/output ends and a frequency range covering DC to 6 GHz . The chip is powered by +5V, has 0V / +5V positive level control , a switching speed of 30ns , and a 1dB compression input power of + 25dBm .

Use restriction parameter [1]	
Control voltage range	-0.5V ～ + 6V
Supply voltage range	+6V
Maximum input power	+30dBm
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 , VDD = +5V)				
index	Minimum	Typical Value	Maximum	unit
Frequency Range		DC-6		GHz
Insertion loss @6GHz	-	1.5	-	dB
Isolation	-	50	-	dB
On-state input return loss	-	22	-	dB
On-state output return loss	-	22	-	dB
P-1dB	-	25	-	dBm
IIP3		40		dBm
Switching speed	-	100	-	ns
Control voltage	-	0/+5(compatible with 3.3)	-	V
Control current		1		mA
voltage	-	+5	-	V
Quiescent Current	-	20	-	mA

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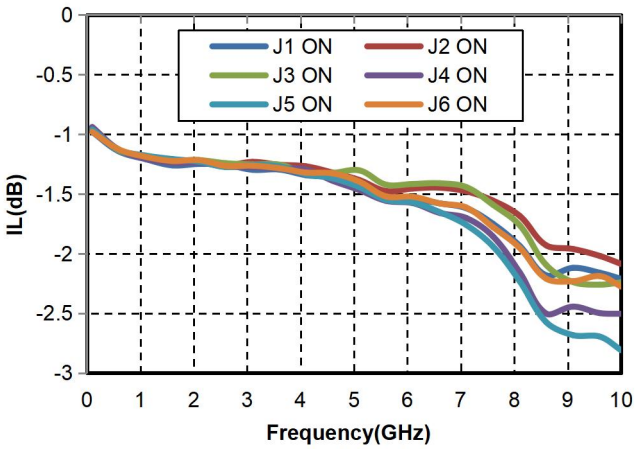
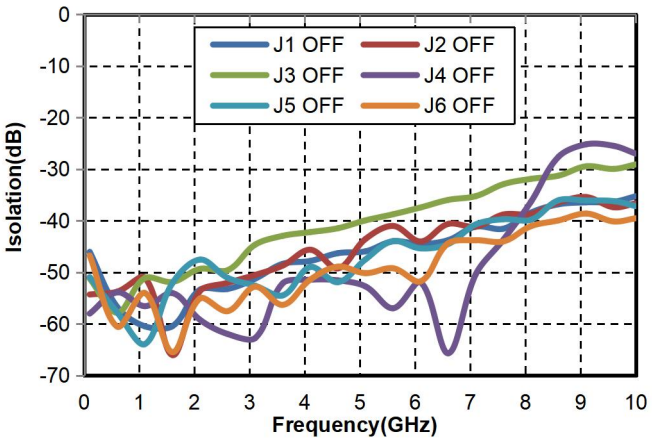
Main index test curve

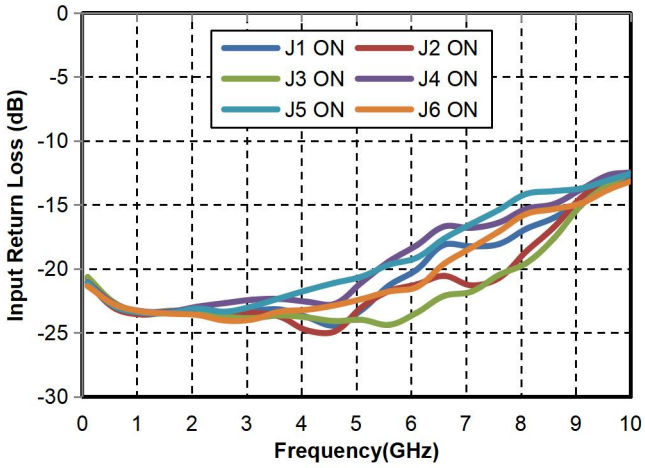
Insertion Loss vs. Operating Frequency



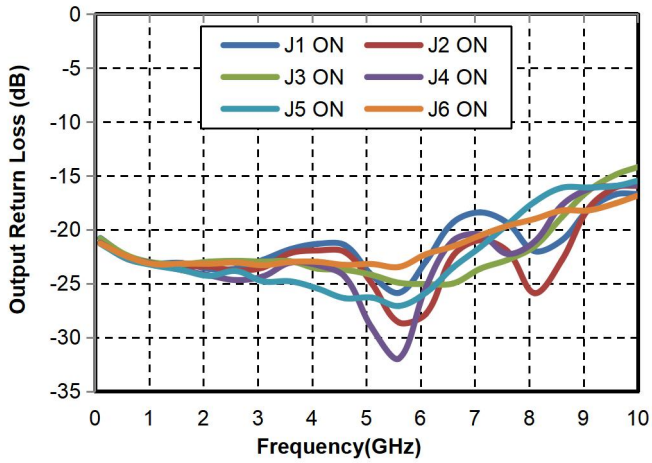
Isolation vs. Operating Frequency



Input Return Loss vs. Operating Frequency (On State)



Output Return Loss vs. Operating Frequency (On State)



Bonding point definition

Bonding point number	Function Symbol	Functional Description
1	RF COMM	RF signal input terminal , no DC blocking capacitor inside , external DC blocking capacitor is required
2~7	RF OUTPUT	RF signal output terminal , no DC blocking capacitor inside , external DC blocking capacitor is required
10, 11, 12	VC	Positive level control port
8, 9	VDD	Power supply voltage (used for positive level control), just connect VDD at either end
Chip bottom	GND	The bottom of the chip needs to be well grounded to RF and DC

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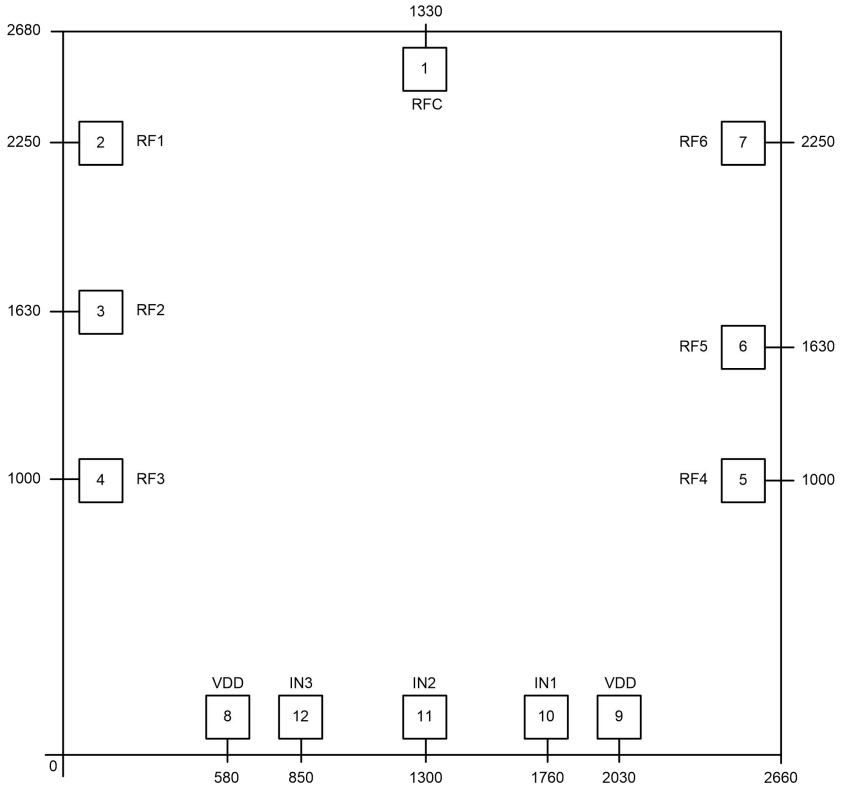
Appearance structure [2]



【 2 】The units in the figure are all micrometers (dimensional tolerance: ±100um.)

Truth table :

VDD	IN3	IN2	IN1	RFc-RF1	RFc-RF2	RFc-RF3	RFc-RF4	RFc-RF5	RFc-RF6
+5V	0V	0V	0V	Pass	Break	Break	Break	Break	Break
+5V	0V	0V	5V	Break	Pass	Break	Break	Break	Break
+5V	0V	5V	0V	Break	Break	Pass	Break	Break	Break
+5V	0V	5V	5V	Break	Break	Break	Pass	Break	Break
+5V	5V	0V	0V	Break	Break	Break	Break	Pass	Break
+5V	5V	0V	5V	Break	Break	Break	Break	Break	Pass

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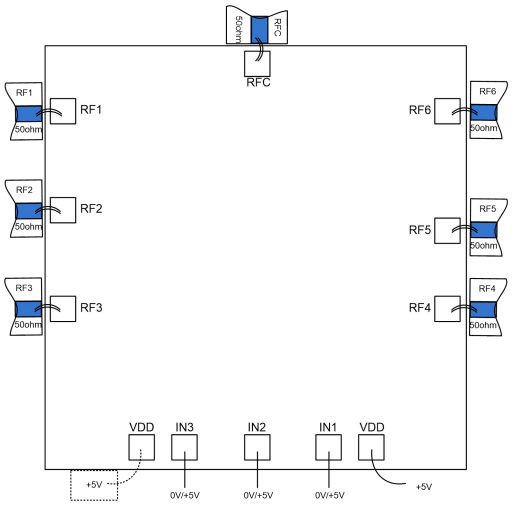
Recommended assembly drawing



Precautions for use

- The chip needs to be stored in an anti-static container and kept in a nitrogen environment.
- bare die surface using wet chemical methods .
- Please strictly comply with ESD protection requirements to avoid electrostatic damage to bare chips.
- General operation: Please use precision pointed tweezers to pick up bare chips. Avoid touching the chip surface with tools or fingers during operation.
- Rack mounting operation suggestions: Bare chip mounting can be done by AuSn solder eutectic sintering or conductive adhesive bonding. The mounting surface must be clean and flat.
- Sintering process: It is recommended to use AuSn solder sheets with a gold -tin ratio of 80/20 . The working surface temperature reaches 255 ℃ and the tool (vacuum chuck) temperature reaches 265 ℃. When the high-temperature mixed gas (nitrogen-hydrogen ratio of 90/10) is blown to the chip, the temperature at the top of the tool should be raised to 290 ℃. Do not let the chip exceed 320 ℃ for more than 20 seconds. The friction time should not exceed 3 seconds.
- Bonding process: The amount of conductive glue dispensed should be as small as possible. After the chip is placed in the installation position , the conductive glue should be vaguely visible around it . For curing conditions, please follow the information provided by the conductive glue manufacturer.
- Bonding operation suggestions: Use Φ0.025mm (1mil) gold wire for both ball and wedge bonding . Thermo-ultrasonic bonding temperature is 150 °C. The pressure of the wedge for ball bonding is 40~50gf , and the pressure of the wedge bonding is 18~22gf . Use the smallest possible ultrasonic energy. The bonding starts at the pressure point on the chip and ends at the package (or substrate) .