

## GaAs MMIC SPDT Absorptive Switch Chip, DC-20GHz

### Performance characteristics

- Frequency range: DC-20GHz
- Full positive power supply, control, integrated TTL
- Can be fully shut down
- Insertion loss : 2.1dB@18GHz
- Isolation: 47dB
- Standing wave ratio: 1.2 :1
- 50Ohm input / output
- Chip size: 1.25 x 1.1 x 0.1mm

### Product Introduction

GSW-0020DT-P-PD is a GaAs MMIC single-pole double-throw switch chip with 50Ω matching at the input/output ends and a frequency range covering DC~20 GHz . The chip is powered by +5V, + 5V /0V positive level control (compatible with +3.3V), switching speed of 20 ns, and 1dB compression input power of + 25dBm .

#### Use restriction parameter <sup>1</sup>

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.

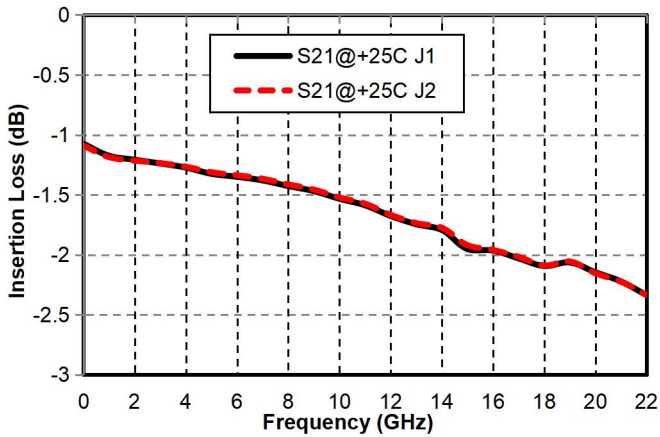
#### Electrical performance parameters ( TA = +25°C , VDD = +5V, VC = 0/+5V )

index	Minimum	Typical Value	Maximum	unit
Frequency Range	DC-20			GHz
Insertion loss @18GHz	-	2.1	-	dB
Isolation	-	47	-	dB
On-state input and output return loss (ON)	-	18/18	-	dB
OFF state output return loss (OFF)	-	20	-	dB
P-1dB	-	25	-	dBm
Switching speed	-	20	-	ns
Control current		500		uA
Input high level voltage	2.7	-	5	V
Input low level voltage	0	-	0.8	V
voltage		+5		V
Quiescent Current	-	4	-	mA

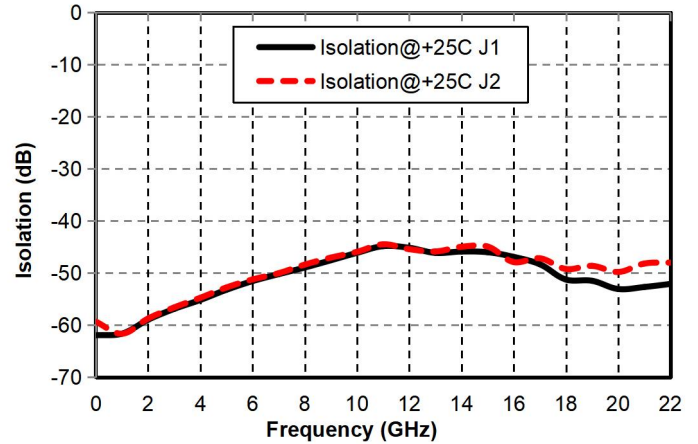
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Main index test curve

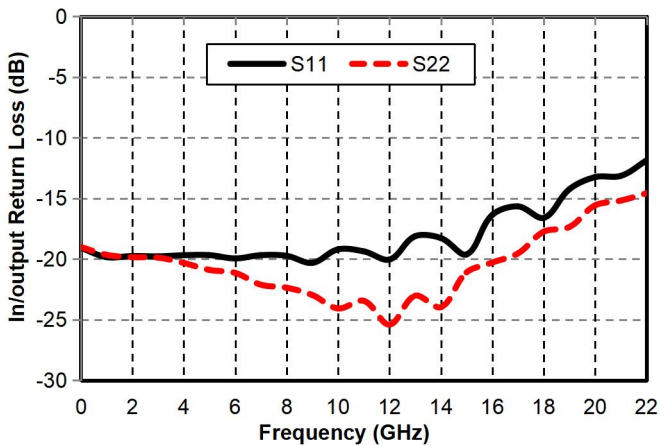
Insertion Loss vs. Operating Frequency



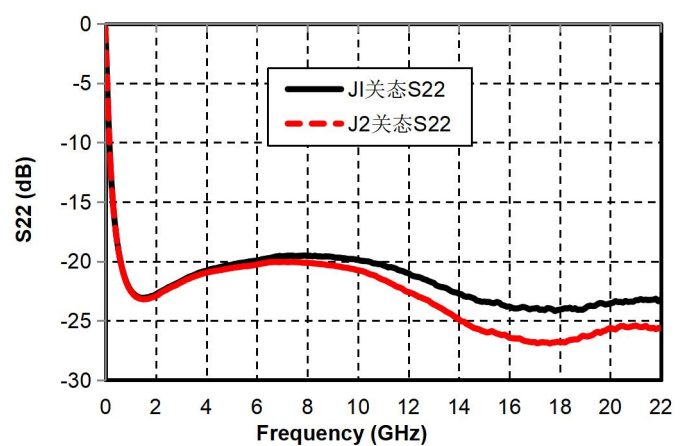
Isolation vs. Operating Frequency



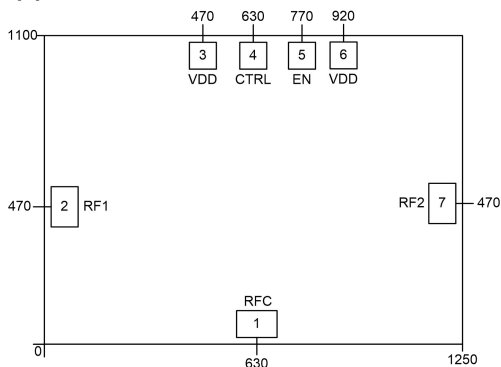
Input/output return loss vs. operating frequency ( on state )



Output Return Loss vs. Operating Frequency ( Off State )



Appearance structure :



The units in the figure are all micrometers (dimensional tolerance:  $\pm 5.0 \mu\text{m}$ .)

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### Bonding point definition

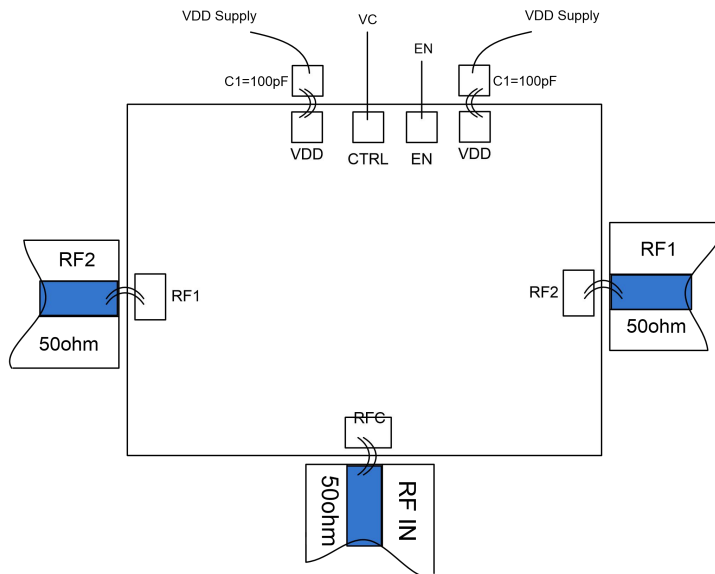
Bonding point number	Function Symbol	Functional Description
1	RFC	RF signal input and output terminals require external broadband DC blocking capacitors
2, 7	RF1/RF2	RF signal input and output terminals require external broadband DC blocking capacitors
4	CTRL	Positive level control port
3, 6	VDD	Power supply voltage, select one
5	EN	Enable control port
Chip bottom	GND	The bottom of the chip needs to be well grounded to RF and DC

### Truth table :

VDD	EN(V)	CTRL ( V )	On state
+5V	0	Low (0)	RF1 on, RF2 off
+5V	0	High (1)	RF1 off, RF2 on
+5V	+5	-	All Off

High (1), +2.7~ +5V; Low (0), 0~ + 0.8V

### Recommended assembly drawing



VDD at either end .