

# GSW-0045ST-N-PD

## GaAs MMIC Reflective SPST Switch Chip, DC-45GHz

### Performance characteristics

- range : DC -45 GHz
- Insertion loss : 1.9dB@45 GHz
- Isolation: 53dB
- On-state SWR: 1. 2
- Integrated logic control
- 50Ohm input / output
- 100% on-wafer testing
- Chip size: 1.25 x 1.10 x 0.1mm

### Product Introduction

GSW-0045ST-N-PD is a GaAs MMIC single-pole single-throw reflective switch chip with 50Ω matching at the input/output ends and a frequency range of DC ~ 45GHz . The chip is powered by -5V, 0V / +5V (compatible with +3.3V) positive level control , switching speed of 20ns , P - 1dB input power of + 23dBm .

Use restriction parameter <sup>1</sup>	
Control voltage range	-0.5V ~ + 6V
Supply voltage range	- 6V
Maximum input power	+30dBm
Operating temperature	-55 ~ +125°C
storage temperature	-65 ~ +150°C

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

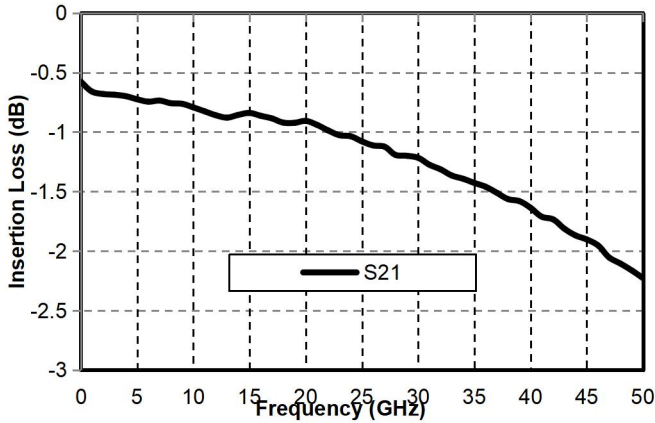
Electrical performance parameters ( TA = +25°C , VEE = -5V, VC = 0/+5V )				
index	Minimum	Typical Value	Maximum	unit
Frequency Range	DC- 45			GHz
Insertion Loss @ 45 GHz	-	1.9	-	dB
Isolation	-	53	-	dB
On-state input return loss	-	23	-	dB
On-state output return loss	-	22	-	dB
P-1dB @ > 0.5 GHz	-	23	-	dBm
Switching speed	-	20	-	ns
Control Level	-	0/+5	-	V
Control current		500		uA
voltage	-	-5	-	V
Quiescent Current	-	1.5	-	mA

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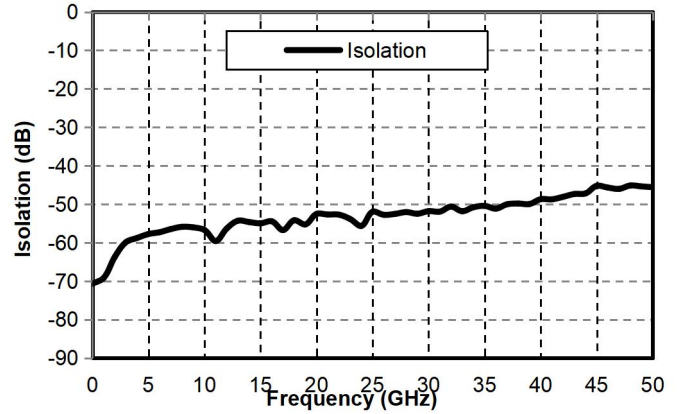
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### Main index test curve

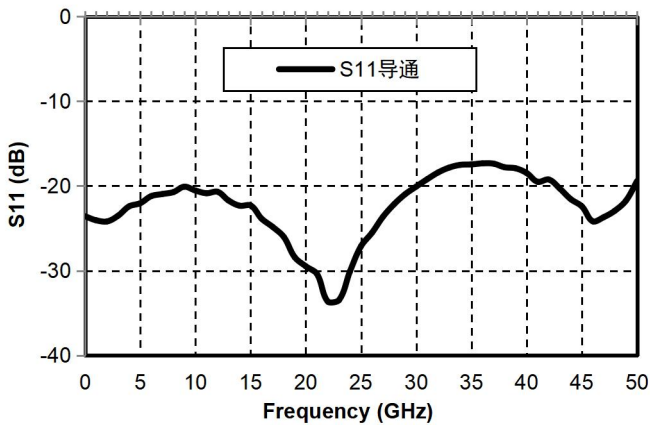
Insertion Loss vs. Operating Frequency



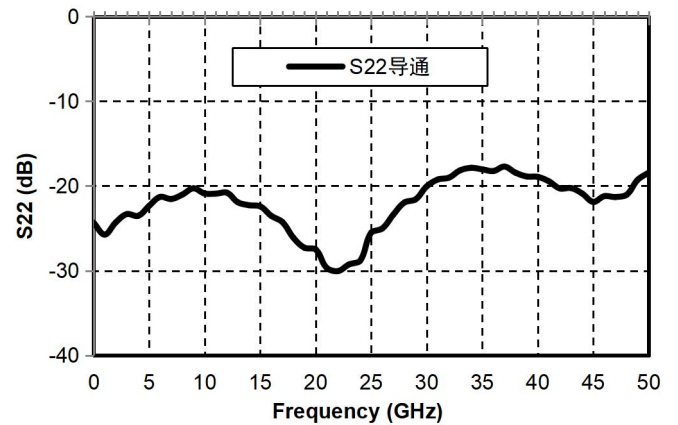
Isolation vs. Operating Frequency



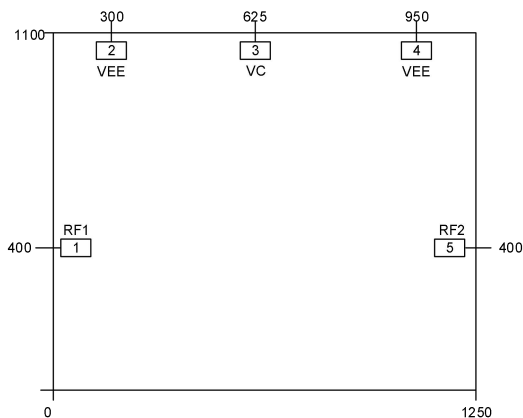
Input Return Loss vs. Operating Frequency (On State)



Output Return Loss vs. Operating Frequency (On State)



### Appearance structure <sup>2</sup>



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

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### Bonding point definition

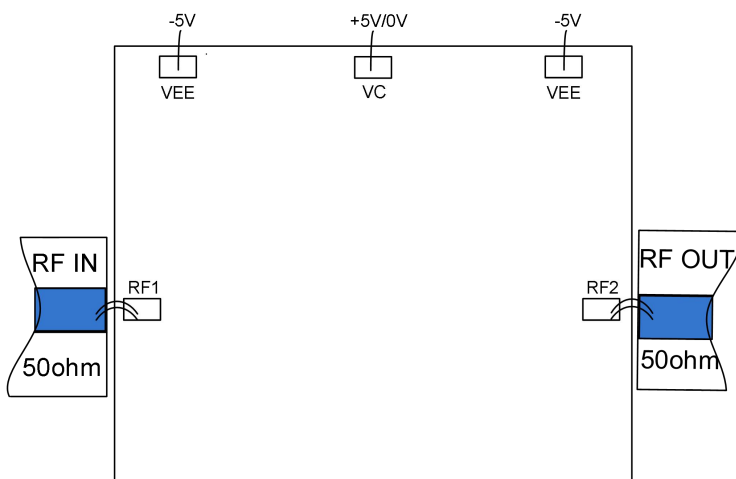
Bonding point number	Function Symbol	Functional Description
1	RF 1	RF signal input / output terminal , no internal DC blocking capacitor
5	RF2	RF signal input / output terminal , no internal DC blocking capacitor
3	VC	Positive level control port
twenty four	V E	voltage
Chip bottom	GND	The bottom of the chip needs to be well grounded to RF and DC

### Truth table :

V E	VC	path
- 5V	0	Continuity
- 5V	1	Shutdown

High (1), +2.7~ +5V; Low (0), 0~ + 0.5V

### Recommended assembly drawing



VEE port can be connected in parallel with a bypass capacitor > 100nF. You can connect VEE on any side.