

## GaAs MMIC SPST reflective switch chip, DC-40GHz

### Performance characteristics

- Frequency range: DC -40GHz
- Insertion loss : 2.0 dB @ 40 GHz
- Isolation: 50 dB
- On-state VSWR : 1.2
- Integrated logic control
- 50Ohm input / output
- 100% on-wafer testing
- Chip size: 1.6 x 1.15 x 0.1 mm

### Product Introduction

GSW-0040ST-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 covering DC ~40 GHz . The chip is powered by -5V, 0V / +5V positive level control (compatible with +3.3V), switching speed of 25ns, 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	+2 7 dBm
Operating temperature	-55 ~ +85°C
storage temperature	-65 ~ +150°C

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

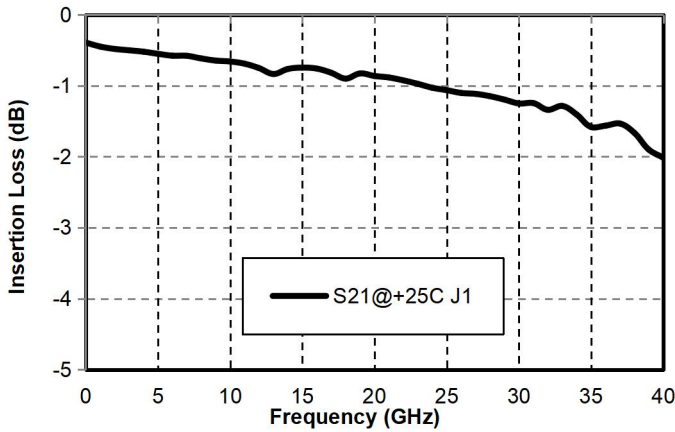
#### Electrical performance parameters ( TA = +25°C , VEE = -5V )

index	Minimum	Typical Value	Maximum	unit
Frequency Range	DC-40			GHz
Insertion loss @40GHz	-	2.0	-	dB
Isolation	-	5 0	-	dB
On-state input return loss	-	2 0	-	dB
On-state output return loss	-	2 0	-	dB
P-1dB @0.5~40 GHz	-	23	-	dBm
Switching time	-	25	-	ns
voltage	-	-5	-	V
Quiescent Current	-	1.5	-	mA
Control high level	+3	+3.3	+5	V
Control low level	0	-	+0.8	V
Control current	-	0.6	1	mA

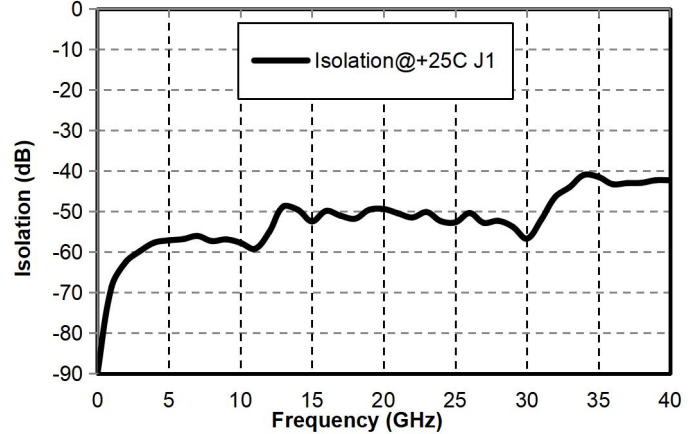
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### Main index test curve

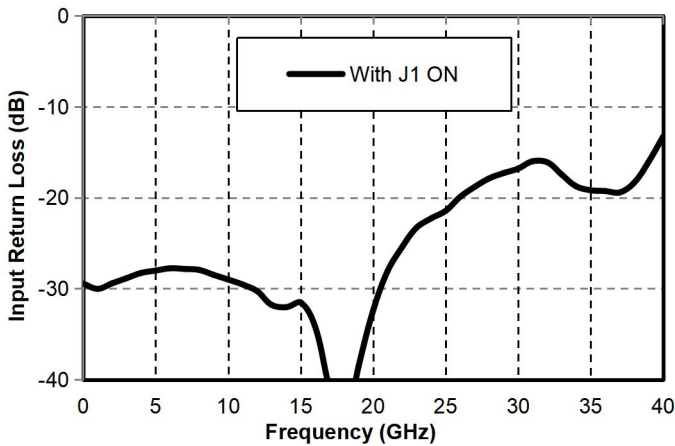
Insertion Loss vs. Operating Frequency



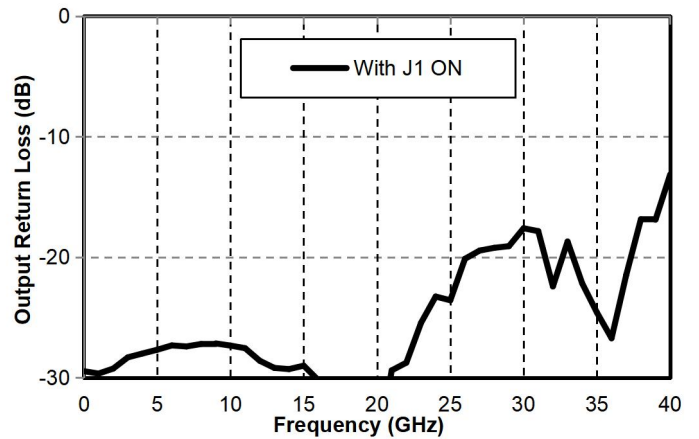
Isolation vs. Operating Frequency



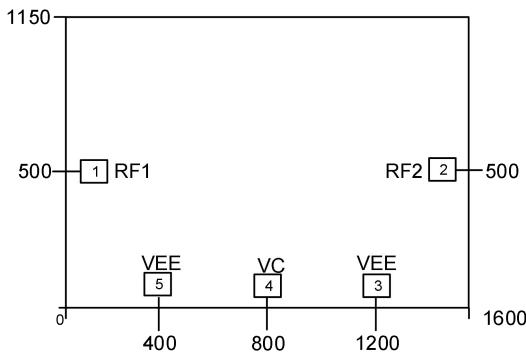
Input Return Loss vs. Operating Frequency  
(On State)



Output Return Loss vs. Operating Frequency  
(On State)



### 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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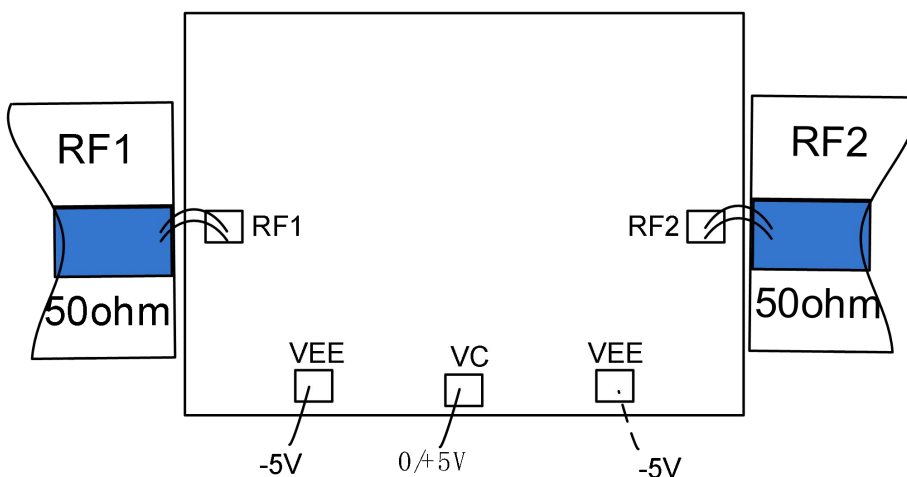
Bonding point definition		
Bonding point number	Function Symbol	Functional Description
1	RF INPUT	RF signal input terminal , no internal DC blocking capacitor
2	RF OUTPUT	RF signal output terminal , no internal DC blocking capacitor
3 , 5	VEE	voltage
4	VC	Control Port
Chip bottom	GND	The bottom of the chip needs to be well grounded to RF and DC

\* Just connect to VEE on either side.

Truth table :

VEE	VC	state
-5V	0V	Shutdown
	+5V ( compatible with +3.3V)	Continuity

Recommended assembly drawing



The VEE port can be connected in parallel with a bypass capacitor > 100nF , just connect it to VEE on either side .