

## GaAs MMIC Absorptive SP4T Switch Chip , DC-19GHz

### Performance characteristics

- Frequency range: DC - 19 GHz
- Insertion loss : 1.8 dB @ 20 GHz
- Isolation: 47dB
- On-state VSWR : 1.2
- Integrated control logic
- 50Ohm input / output
- 100% on-wafer testing
- Chip size: 1.72 x 1.94 x 0.1mm

### Product Introduction

GSW-00194T-PD is a GaAs MMIC absorptive single-pole four-throw switch chip with 50Ω matching at the input/output ends and a frequency range covering DC ~ 19 GHz . The chip is powered by -5V, + 5V /0V positive level control , compatible with 3.3V , switching speed of 30ns , and 1dB compression input power of + 21dBm .

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

Control voltage range	-0.5V ~ + 6V
Supply voltage range	- 6V
Maximum input power	+27 dBm
Operating temperature	-55 ~ +85°C
storage temperature	-65 ~ +150°C

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

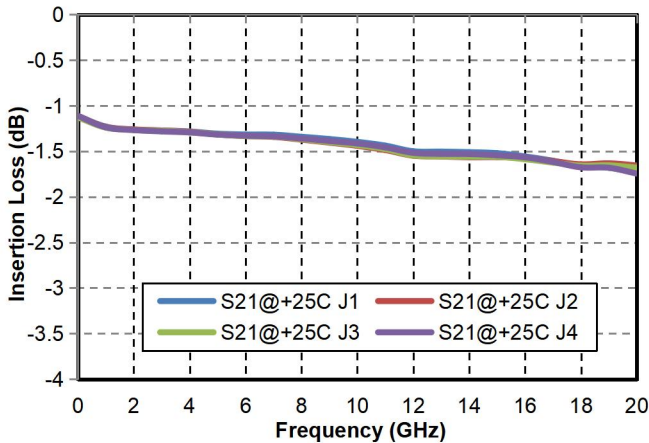
#### Electrical performance parameters ( TA = +25°C , VEE = -5V )

index	Minimum	Typical Value	Maximum	unit
Frequency Range	DC-19			GHz
Insertion loss @20GHz	-	1.8	-	dB
Isolation	-	47	-	dB
On-state input /output return loss	-	19	-	dB
Off-state output return loss	-	16	-	dB
P-1dB @0.5~19 GHz	-	twenty one	-	dBm
IIP3	-	3 6	-	dBm
Switching speed	-	30	-	ns
voltage	-	-5	-	V
Quiescent Current	-	10	-	mA
Control voltage	0	-	+5 (compatible with +3.3)	V
Control current	-	1	-	mA

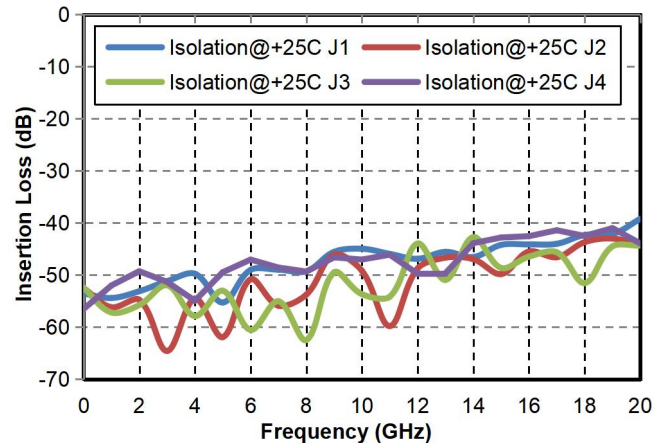
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Main index test curve

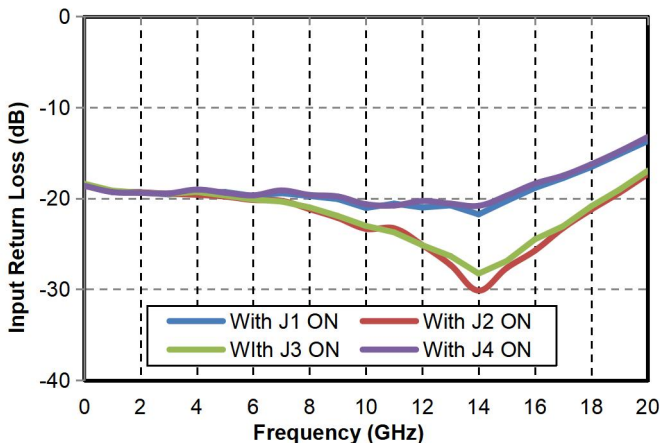
Insertion Loss vs. Operating Frequency



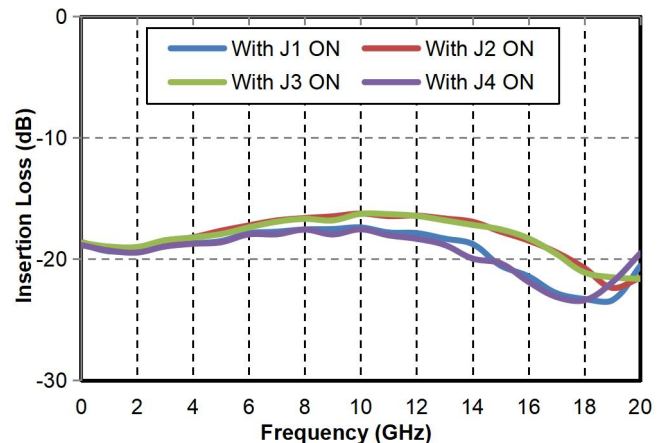
Isolation vs. Operating Frequency



Input Return Loss vs. Operating Frequency ( On State )



Output Return Loss vs. Operating Frequency ( On State )



### Bonding point definition

Bonding point number	Function Symbol	Functional Description
1	RF COMM	RF signal input terminal , no internal DC blocking capacitor
2, 3, 4, 5	RF OUTPUT	RF signal output terminal , no internal DC blocking capacitor
7, 8	IN1, IN2	Positive level control port
6, 9	VEE	Power supply voltage (connect VEE at either end)
Chip bottom	GND	The bottom of the chip needs to be well grounded to RF and DC

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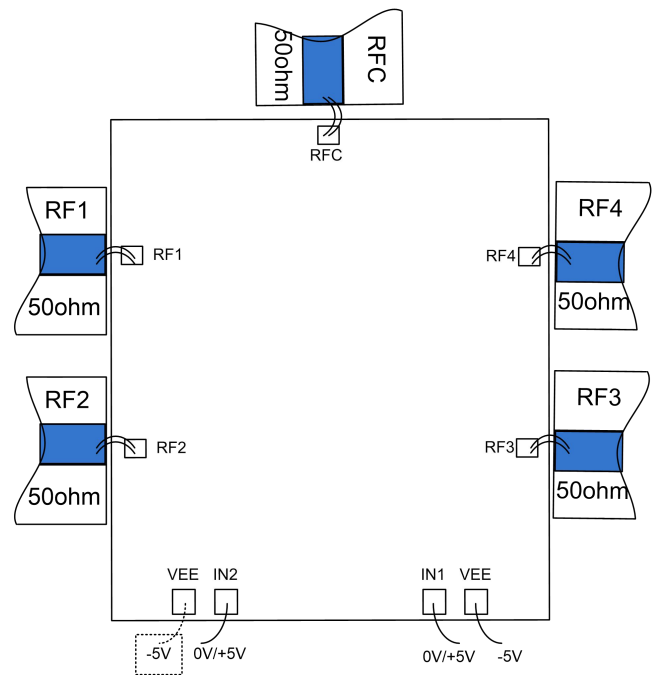
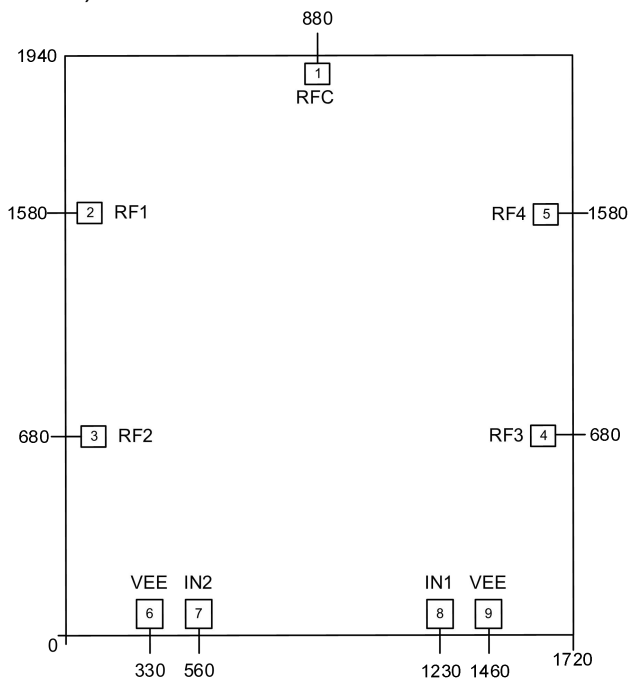
### Truth Table

VEE	IN 2	IN1	RRC-RF1	RRC-RF2	RRC-RF3	RRC-RF4
-5V	Low (0)	Low (0)	Conductivity	Shutdown	Shutdown	Shutdown
	Low (0)	High (1)	Shutdown	Conductivity	Shutdown	Shutdown
	High (1)	Low (0)	Shutdown	Shutdown	Conductivity	Shutdown
	High (1)	High (1)	Shutdown	Shutdown	Shutdown	Conductivity

High (1), + 3 ~ + 5V; Low (0), 0 ~ + 0.5 V

Appearance structure <sup>2</sup> (Dimension tolerance: ±100um)

Recommended assembly drawing



\* Just connect to VEE on either side. VEE port can be connected in parallel with bypass capacitor > 100nF .