

## GaAs monolithic integrated single pole double throw switch

DC~12GHz

### key indicator

- Frequency range: DC~12GHz
- Isolation: 48dB typ.
- Insertion loss: 0.8dBtyp.
- Control level: 0/+5V
- Nanosecond switch
- Chip size: 1.4mm×1.25mm×0.1mm

### typical application

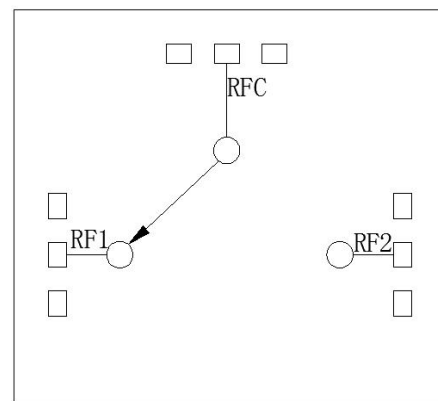
- Wireless communication equipment
- Radar and electronic countermeasures
- Military and aerospace
- Instruments and meters
- Microwave radio
- Test and measure

### Product Introduction

AY1767G is a broadband reflective gallium arsenide pHEMT Single-pole double-throw switch chip, covering frequency range DC~12GHz, chip Provides typical 48dB isolation and 0.8dB insertion loss. Use 0/+5V logic control. Working The operating frequency band has excellent switching characteristics and port standing wave characteristics, suitable for Suitable for microwave hybrid integrated circuits and multi-chip modules and low Power consumption system.

The switch chip uses an on-chip through-hole metallization process to ensure good quality Good grounding. The back of the chip is metallized, which is suitable for Crystal sintering or conductive adhesive bonding process.

### Functional block diagram



### Electrical performance (T<sub>A</sub>=25°C, control level=0/+5V, 50Ω system)

index	Test frequency	Minimum	Typical value	Max	unit
Insertion loss	DC~12GHz	-	-0.8	-	dB
Isolation	DC~12GHz	-	-48	-	dB
VSWRRFC	DC~12GHz	-	1.2	-	
VAWRRF1, RF2(ON)	DC~12GHz	-	1.2	-	
Enter P <sub>1</sub> dB	DC~12GHz	-	25	-	dBm
Enter IP <sub>3</sub>	DC~12GHz	-	42	-	dBm
Switching time	DC~12GHz	-	30	-	ns

### Absolute maximum ratings

RF input power	+27dBm	Operating temperature	-55 °C ~ + 85 °C
Control voltage range	0~5.5V	Storage temperature	-65 °C ~ + 150 °C
Electrostatic protection level (HBM)	Class1A	Channel temperature	150 °C

### Bias voltage & current

V <sub>D</sub>	I <sub>D</sub>
-5V	2mA

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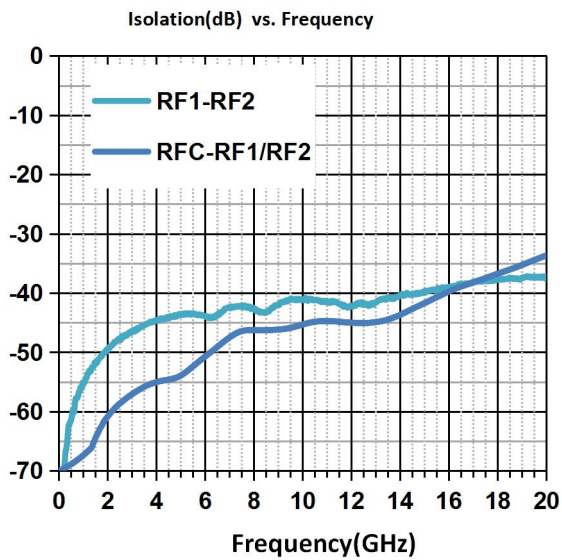
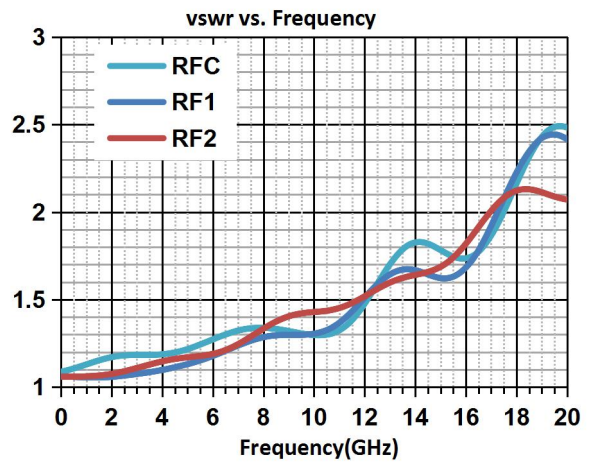
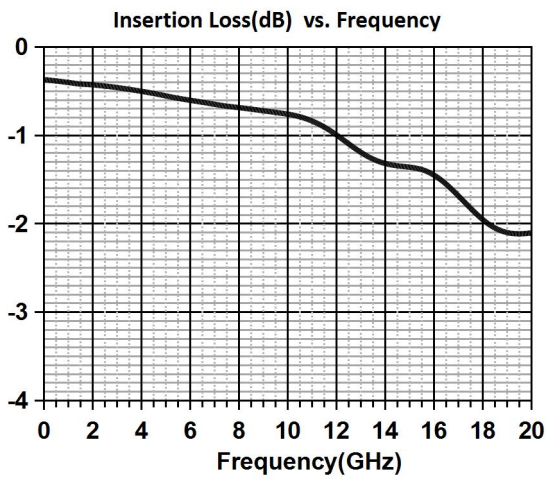
**Control voltage**

state	Bias condition
Low	0~0.5V
high	3.0~5.5V

**Truth table**

Control output	On-off state	
	RFC-RF	RFC-RF2
Low	O	OFF
high	OF	ON

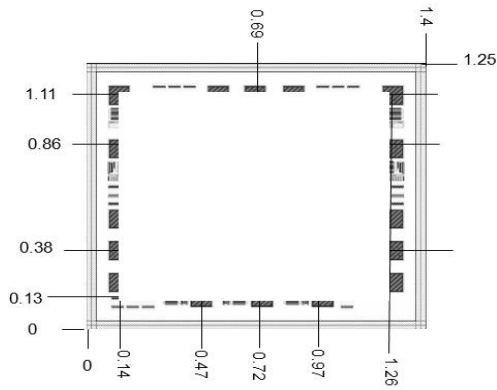
**Typical test curve**



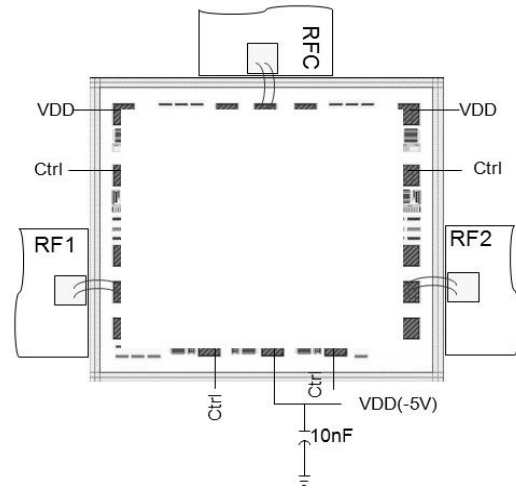
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Shape and port size (mm)



Recommended assembly drawing



### Precautions

1. The chip is stored in a dry, nitrogen environment and used in an ultra-clean environment;
2. GaAs material is brittle and cannot touch the surface of the chip, so you must be careful when using it;
3. Chips are sintered with conductive glue or alloy (the alloy temperature cannot exceed 300°C, and the time cannot exceed 30 seconds) to make it fully grounded;
4. The gap between the microwave port of the chip and the substrate should not exceed 0.05mm. Use  $\Phi 25\mu\text{m}$  double gold wire for bonding. The recommended length of gold wire is 250~400 $\mu\text{m}$ ;
5. The chip is sensitive to static electricity, so pay attention to anti-static during storage and use.