

# GaAs SPDT Terminated Switch

## DC - 2.5 GHz

## SW-337, SW-338, SW-339

V2.00

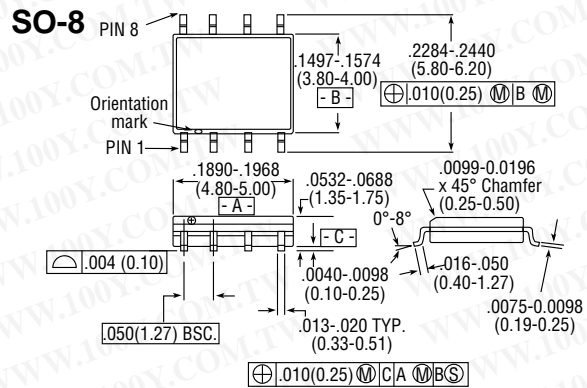
### Features

- Very Low Power Consumption: 75  $\mu$ W
- Low Insertion Loss: 0.5 dB
- High Isolation: 33 dB up to 2 GHz (SW-337, SW-338)  
28 dB up to 2 GHz (SW-339)
- Very High Intercept Point: 46 dBm  $IP_3$
- Nanosecond Switching Speed
- Temperature Range: -40°C to +85°C
- Low Cost SOIC8 Plastic Package
- Tape and Reel Packaging Available<sup>1</sup>

### Description

M/A-COM's SW-337, SW-338 and SW-339 are GaAs MMIC SPDT terminated switches in a low cost SOIC 8-lead surface mount plastic package. They are ideally suited for use where very low power consumption is required. Typical applications include transmit/receive switching, switch matrices, and filter banks in systems such as: radio and cellular equipment, PCM, GPS, fiber optic modules, and other battery powered radio equipment. The difference between the switches is in the pin configuration.

The SW-337, SW-338 and SW-339 are fabricated with monolithic GaAs MMICs using a mature 1-micron process. The process features full chip passivation for increased performance and reliability.



8-Lead SOP outline dimensions

Narrow body .150

(All dimensions per JEDEC No. MS-012-AA, Issue C)

Dimensions in ( ) are in mm.

Unless otherwise noted: .xxx =  $\pm 0.010$  (.xx =  $\pm 0.25$ )

.xx =  $\pm 0.02$  (.x =  $\pm 0.5$ )

### Ordering Information

Part Number	Package
SW-337 PIN	SOIC 8 Lead
SW-337 TR	Forward Tape & Reel
SW-337 RTR	Reverse Tape & Reel
SW-338 PIN	SOIC 8 Lead
SW-338 TR	Forward Tape & Reel
SW-338 RTR	Reverse Tape & Reel
SW-339 PIN	SOIC 8 Lead
SW-339 TR	Forward Tape & Reel
SW-339 RTR	Reverse Tape & Reel

### Electrical Specifications, $T_A = \pm 25^\circ\text{C}$

Parameter	Test Conditions <sup>2</sup>	Unit	SW-337, SW-338			SW-339		
			Min.	Typ.	Max.	Min.	Typ.	Max.
Insertion Loss	DC - 0.1 GHz	dB		0.4	0.6		0.4	0.6
	DC - 0.5 GHz	dB		0.5	0.7		0.5	0.7
	DC - 1.0 GHz	dB		0.5	0.7		0.5	0.7
	DC - 2.0 GHz	dB		0.7	0.9		0.7	0.9
Isolation	DC - 0.1 GHz	dB	50	53		50	53	
	DC - 0.5 GHz	dB	43	46		43	46	
	DC - 1.0 GHz	dB	36	39		35	38	
	DC - 2.0 GHz	dB	30	33		25	28	
VSWR	On	DC - 2.0 GHz		1.2:1			1.2:1	
	Off	DC - 2.0 GHz		1.2:1			1.2:1	
Trise, Tfall	10% to 90% RF, 90% to 10% RF	nS		7			7	
	50% Control to 90% RF, 50% Control to 10% RF	nS		10			10	
Transients	In Band	mV		25			25	
	One dB Compression Point	dBm		25			25	
Compression Point	Input Power	dBm		30			30	
	Input Power	dBm		30			30	
2nd Order Intercept	Measured Relative to Input Power	dBm		60			60	
	0.5 - 2.0 GHz (for two-tone input power up to +5 dBm)	dBm		65			65	
3rd Order Intercept	Measured Relative to Input Power	dBm		40			40	
	0.5 - 2.0 GHz (for two-tone input power up to +5 dBm)	dBm		46			46	

1. Refer to "Tape and Reel Packaging" Section, or contact factory.

2. All measurements with 0, -5 control voltages at 1 GHz in a 50 $\Omega$  system, unless otherwise specified.

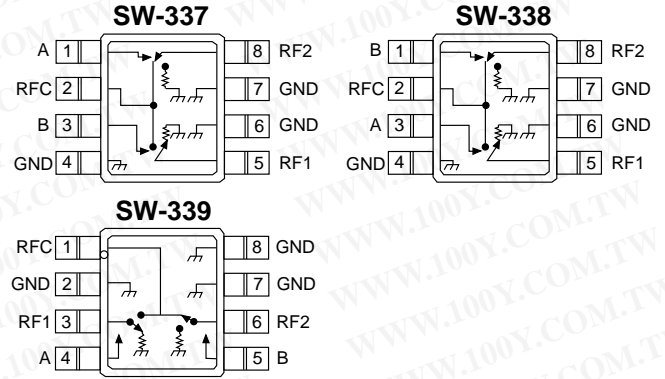
Specifications Subject to Change Without Notice.

**Absolute Maximum Ratings**

Parameter	Absolute Maximum <sup>1</sup>
Max. Input Power	
0.05 GHz	+27 dBm
0.5 – 2.0 GHz	+34 dBm
Control Voltage	+5V, -8.5V
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C

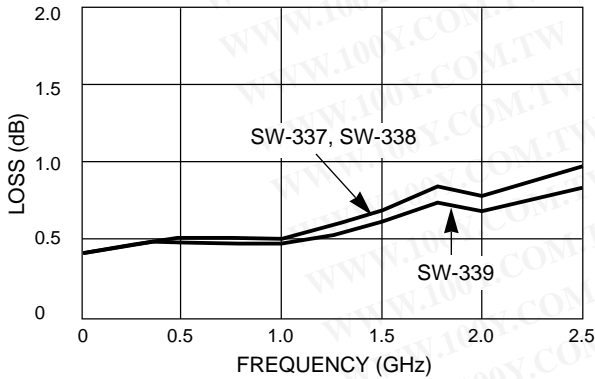
1. Operation of this device above any one of these parameters may cause permanent damage.

**Functional Schematics**

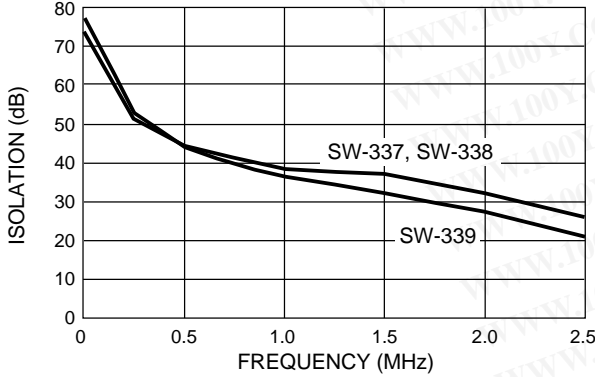


**Typical Performance @ +25°C**

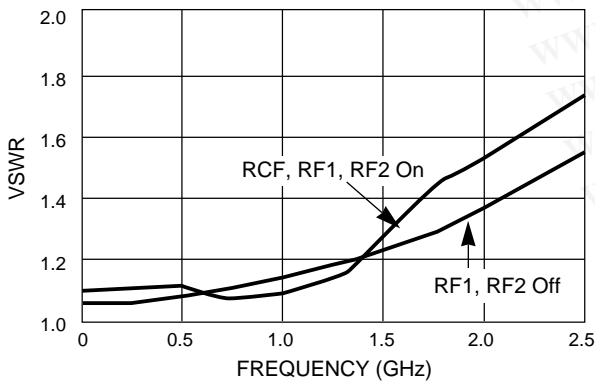
**INSERTION LOSS vs FREQUENCY**



**ISOLATION vs FREQUENCY**



**VSWR vs FREQUENCY**



**Pin Configuration**

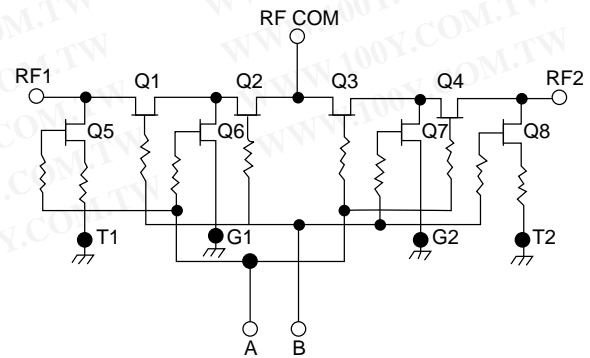
SW-337		SW-338		SW-339	
Pin No.	Description	Pin No.	Description	Pin No.	Description
1	A	1	B	1	RF Common
2	RF Common	2	RF Common	2	GND
3	B	3	A	3	RF1
4	GND	4	GND	4	A
5	RF1	5	RF1	5	B
6	GND	6	GND	6	RF2
7	GND	7	GND	7	GND
8	RF2	8	RF2	8	GND

**Truth Table**

Control Inputs		Condition of Switch RF Common to Each RF Port	
A	B	RF1	RF2
1	0	ON	OFF
0	1	OFF	ON

"0" – 0 – -0.2V @ 20 μA max.  
 "1" – -5V @ 30 μA Typ to -8V @ 720 μA max.

**Electrical Schematic**



Specifications Subject to Change Without Notice.

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