

# GaAs SPDT Switch

## DC-2.5 GHz

SW-239

### Features

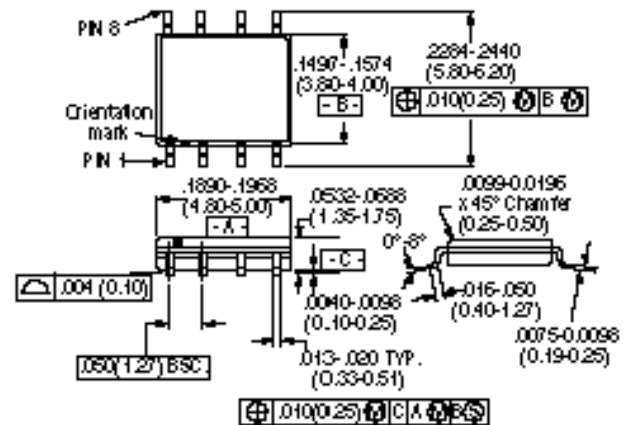
- Very Low Power Consumption: 50  $\mu$ W
- Low Insertion Loss: 0.5 dB
- High Isolation: 25 dB up to 2 GHz
- Very High Intercept Point: 46 dBm IP<sub>3</sub>
- Nanosecond Switching Speed
- Temperature Range: -40°C to + 85°C
- Low Cost SOIC8 Plastic Package
- Tape and Reel Packaging Available!

### Description

M/A-COM's SW-239 is a GaAs MMIC SPDT switch in a low cost SOIC 8-LD surface mount plastic package. The SW-239 is 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 SW-239 is fabricated with a monolithic GaAs MMIC using a mature 1 micron process. The process features full chip passivation for increased performance and reliability.

### SO-8



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 =  $\pm 0.10$  (xx =  $\pm 0.25$ )  
xx =  $\pm 0.02$  (x =  $\pm 0.5$ )

### Electrical Specifications, T<sub>A</sub> = 25°C

Parameter	Test Conditions <sup>2</sup>	Unit	Min.	Typ.	Max.
Insertion Loss	DC - 0.1 GHz	dB		0.4	0.6
	DC - 0.5 GHz	dB		0.4	0.6
	DC - 1.0 GHz	dB		0.5	0.7
	DC - 2.0 GHz	dB		0.6	0.8
Isolation	DC - 0.1 GHz	dB	52	56	
	DC - 0.5 GHz	dB	40	43	
	DC - 1.0 GHz	dB	30	33	
	DC - 2.0 GHz	dB	22	24	
Trise, Tfall Ton, Toff Transients	10% to 90% RF, 90% to 10% RF	nS		2	
	50% Control to 90% RF, 50% Control to 10% RF	nS		4	
	In Band	mV		15	
One dB Compression Point	Input Power 0.05 GHz	dBm		21	
	Input Power 0.5 - 2.0 GHz	dBm		27	
2nd Order Intercept	Measured Relative to Input Power 0.05 GHz	dBm		55	
	(for two-tone input power up to +6 dbm)	dBm		68	
3rd Order Intercept	Measured Relative to Input Power 0.05 GHz	dBm		40	
	(for two-tone input power up to +6 dbm)	dBm		46	

1. Refer to 'Tape and Reel Packaging' Section, or contact factory.
2. All measurements with 0, -5V control voltages at 1 GHz in a 50 $\Omega$  system, unless otherwise specified.

SW-239 Pin  
SW-239TR  
SW-239RTR

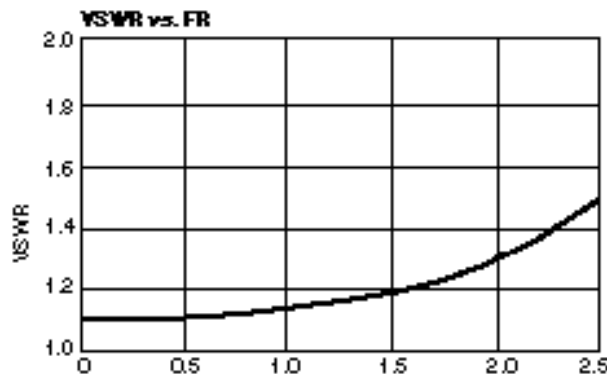
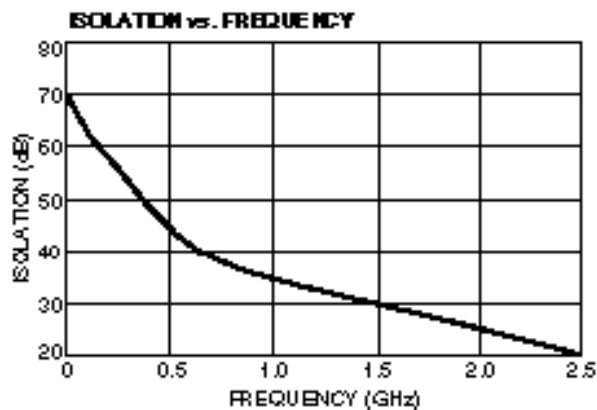
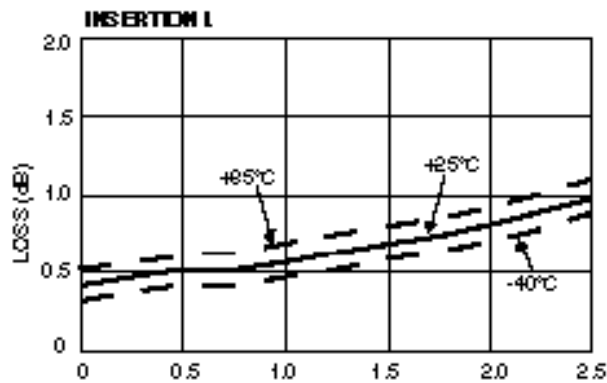
SOIC 8 Lead  
Forward Tape & Reel  
Reverse Tape & Reel

## Absolute Maximum Ratings

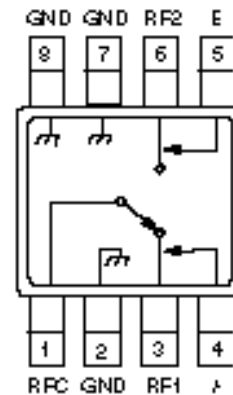
Parameter	Absolute Maximum <sup>1</sup>
Max. Input Power	
0.05 GHz	+27 dBm
0.5 – 2.0 GHz	+34 dBm
Control Voltage	+5V, -8.5V
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C

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

## Typical Performance



## Functional Schematic



## Pin Configuration

Pin No.	Description
1	RFCommon
2	GND
3	RF1
4	A
5	B
6	RF2
7	GND
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 @ 20µA max.

'1' - -5V @ 20µA Typ to -8V @ 40µA max

## Electrical Schematic

