

# GaAs SPST Switch

## DC - 2.5 GHz

# SW-259

V3.00

### Features

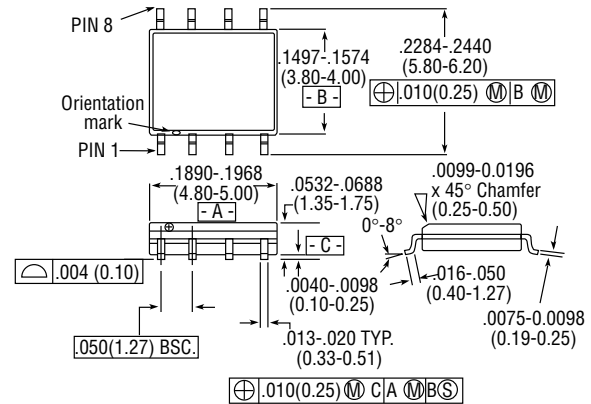
- Very Low Power Consumption: 50  $\mu$ W
- Low Insertion Loss: 1.0 dB
- High Isolation: 35 dB up to 2 GHz
- Very High Intercept Point: 46 dBm IP 3
- Nanosecond Switching Speed
- Temperature Range: -40°C to +85°C
- Tape and Reel Packaging Available 1

### Description

M/A-COM's SW-259 is a GaAs MMIC SPST terminated switch in a low cost SOIC 8-lead surface mount plastic package. The SW-259 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-259 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 =  $\pm 0.010$  (.xx =  $\pm 0.25$ )  
.xx =  $\pm 0.02$  (.x =  $\pm 0.5$ )

### Ordering Information

Model No.	Package
SW-259 PIN	SOIC 8-Lead Plastic
SW-259TR	Forward Tape & Reel
SW-259RTR	Reverse Tape & Reel

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

Parameter	Test Conditions <sup>2</sup>	Unit	Min.	Typ.	Max
Insertion Loss	DC - 0.1 GHz	dB		0.5	0.6
	DC - 0.5 GHz	dB		0.8	1.0
	DC - 1.0 GHz	dB		1.0	1.2
	DC - 2.0 GHz	dB		1.4	1.6
Isolation	DC - 0.1 GHz	dB	62	65	
	DC - 0.5 GHz	dB	55	58	
	DC - 1.0 GHz	dB	45	48	
	DC - 2.0 GHz	dB	32	35	
VSWR	DC - 2.0 GHz On		1.2:1		
	DC - 2.0 GHz Off		1.2:1		
Trise, Tfall Ton, Toff Transients	10% to 90% RF, 90% to 10% RF	nS		4	
	50% Control to 90% RF, 50% Control to 10% RF	nS		8	
	In Band	mV		35	
One dB Compression Point	Input Power 0.05 GHz	dBm		18	
	Input Power 0.5 - 2.0 GHz	dBm		23	
2nd Order Intercept	Measured Relative to Input Power 0.05 GHz	dBm		55	
	Measured Relative to Input Power 0.5 - 2.0 GHz (for two-tone input power up to +5 dBm)	dBm		68	
3rd Order Intercept	Measured Relative to Input Power 0.05 GHz	dBm		40	
	Measured Relative to Input Power 0.5 - 2.0 GHz (for two-tone input power up to +5 dBm)	dBm		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.

M/A-COM, Inc.

North America: Tel. (800) 366-2266  
Fax (800) 618-8883

Asia/Pacific: Tel. +81 3 3263 8761  
Fax +81 3 3263 8769

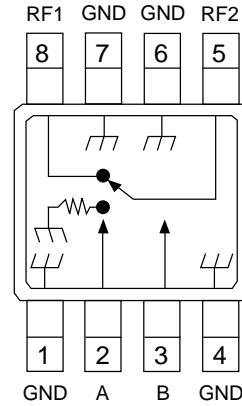
Europe: Tel. +44 (1344) 869 595  
Fax +44 (1344) 300 020

**Absolute Maximum Ratings<sup>1</sup>**

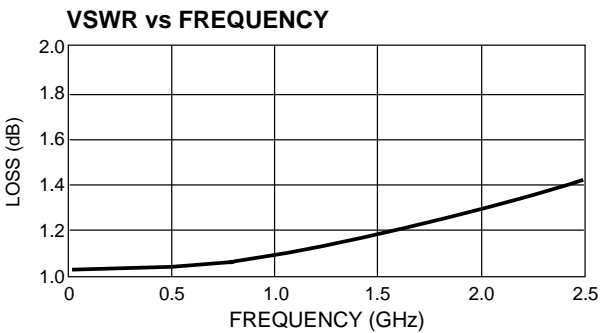
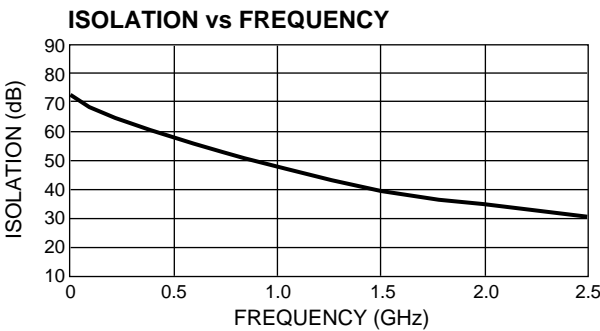
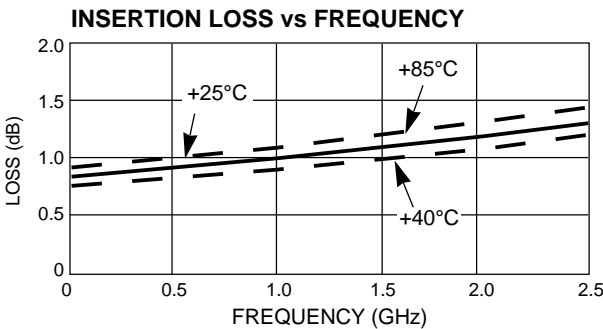
Parameter	Absolute Maximum <sup>1,2</sup>
Max. Input Power 0.05 GHz	+27 dBm
0.5 – 2 GHz	+34 dBm
Control Voltage	+5V, -8.5V
Storage Temperature	-65°C to 150°C

1. Operation of this device above any one of these parameters may cause permanent damage
2. When the RF Input power is applied to a terminated port, the absolute maximum is +32 dBm.

**Functional Schematic**



**Typical Performance**



**Pin Configuration**

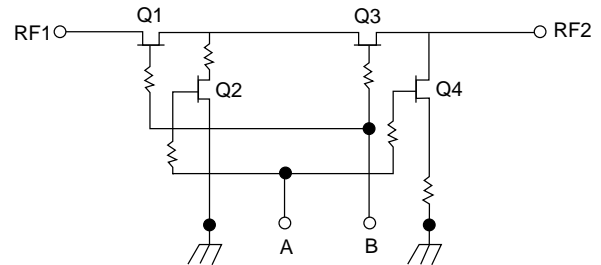
Pin No.	Description
1	GND
2	A
3	B
4	GND
5	RF2
6	GND
7	GND
8	RF1

**Truth Table**

Control Inputs		Condition of Switch RF STATE
A	B	
1	0	On
0	1	Off

"0" – 0 – -0.2V @ 20 μA max.  
 "1" – -5V @ 20μA Typ to -8V @ 600 μA max.

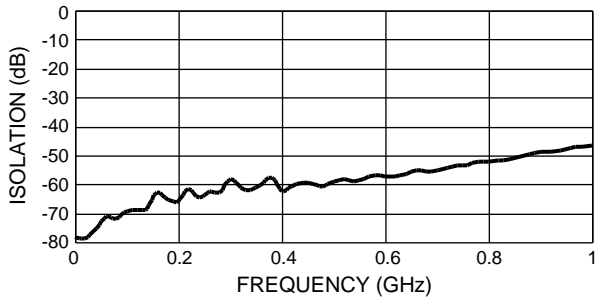
**Electrical Schematic**



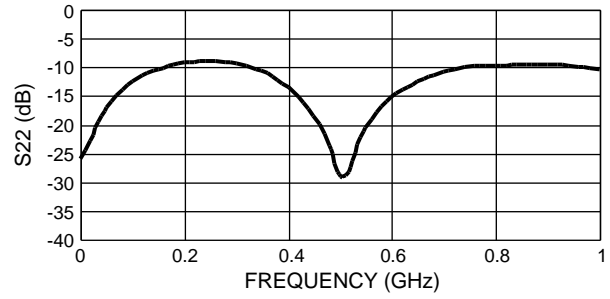
Specifications Subject to Change Without Notice.

Swept Data Characterized in 75 Ohms

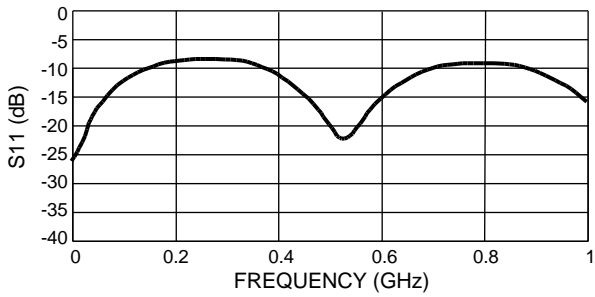
ISOLATION vs FREQUENCY



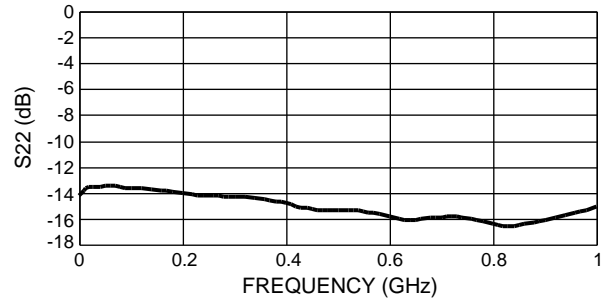
S22 (On) vs FREQUENCY



S11 (On) vs FREQUENCY



S22 (Off) vs FREQUENCY



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