

GaAs SPST Switch

DC - 2.5 GHz

SW-259

V3.00

Features

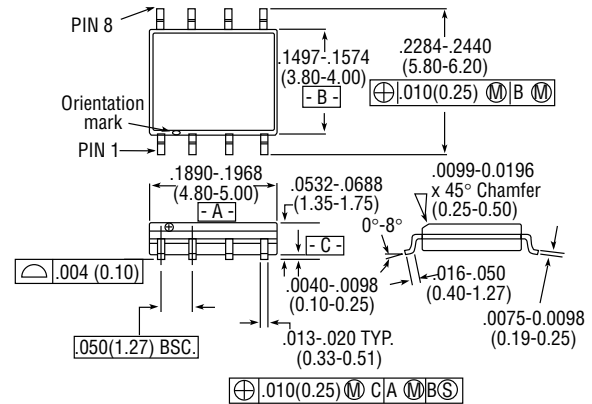
- Very Low Power Consumption: 50 μ W
- Low Insertion Loss: 1.0 dB
- High Isolation: 35 dB up to 2 GHz
- Very High Intercept Point: 46 dBm IP 3
- Nanosecond Switching Speed
- Temperature Range: -40°C to +85°C
- Tape and Reel Packaging Available 1

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 = ± 0.010 (.xx = ± 0.25)
.xx = ± 0.02 (.x = ± 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 ²	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 Ω 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

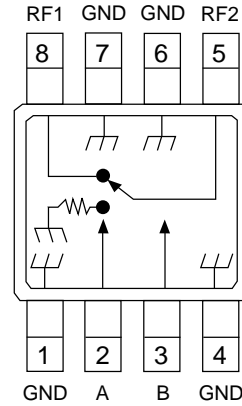
Europe: Tel. +44 (1344) 869 595
Fax +44 (1344) 300 020

Absolute Maximum Ratings¹

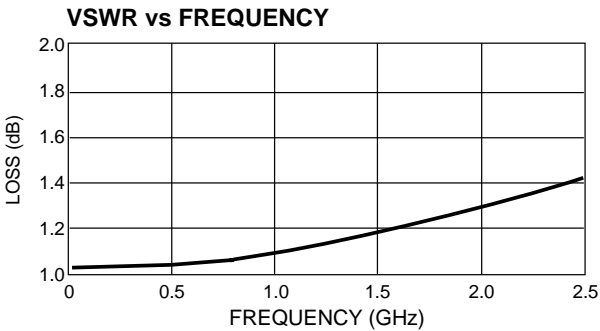
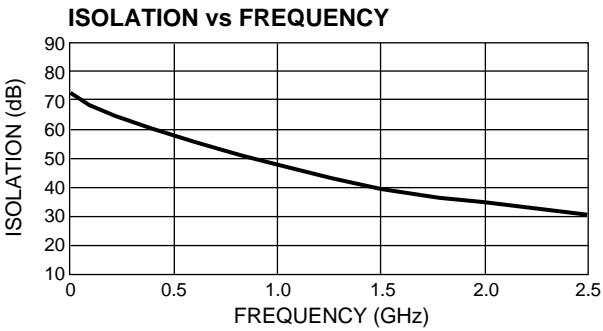
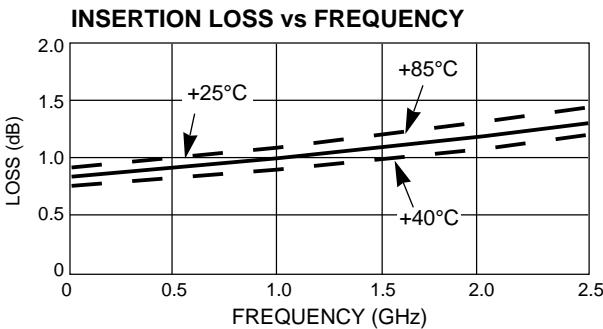
Parameter	Absolute Maximum ^{1,2}
Max. Input Power	
0.05 GHz	+27 dBm
0.5 – 2 GHz	+34 dBm
Control Voltage	+5V, -8.5V
Storage Temperature	-65°C to 150°C

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

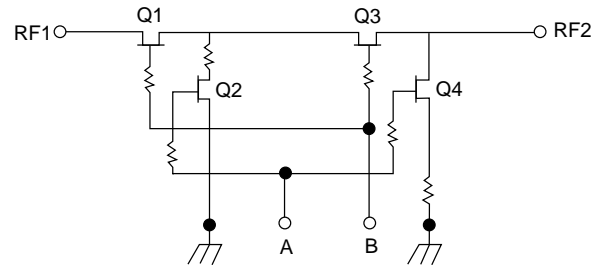
Pin No.	Description
1	GND
2	A
3	B
4	GND
5	RF2
6	GND
7	GND
8	RF1

Truth Table

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

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

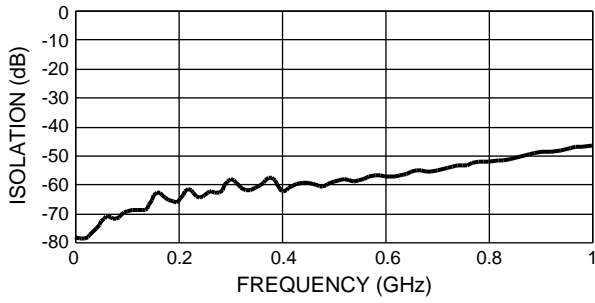
Electrical Schematic



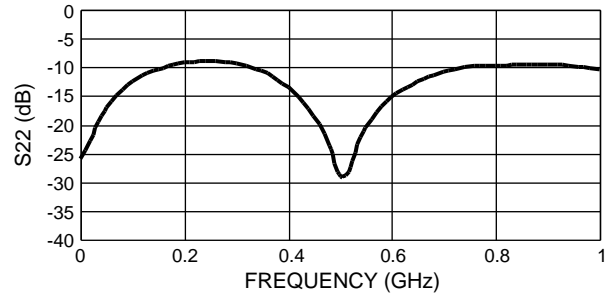
Specifications Subject to Change Without Notice.

Swept Data Characterized in 75 Ohms

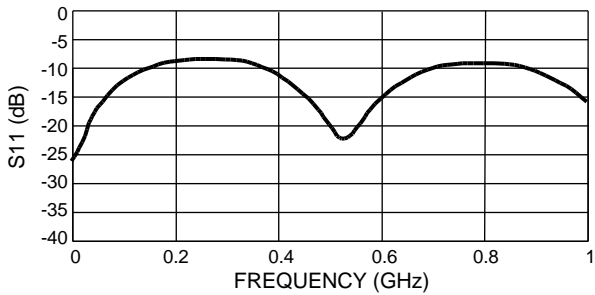
ISOLATION vs FREQUENCY



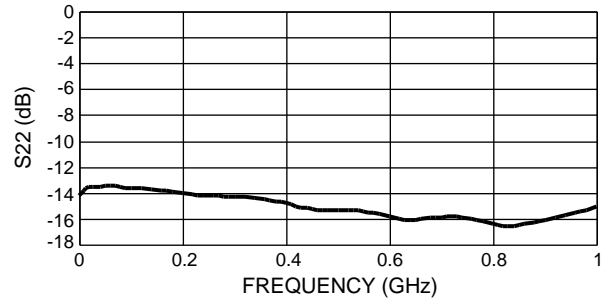
S22 (On) vs FREQUENCY



S11 (On) vs FREQUENCY



S22 (Off) vs FREQUENCY



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