

# GaAs DPDT Switch

## DC - 2 GHz

# SW-289

V 2.00

### Features

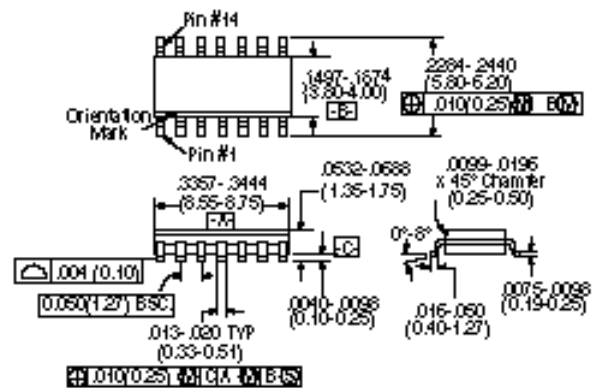
- Very Low Power Consumption: 100  $\mu$ W
- Low Insertion Loss: 0.5 dB
- High Isolation: 25 dB up to 2 GHz
- Very High Intercept Point: 48 dBm IP<sub>3</sub>
- Nanosecond Switching Speed
- Temperature Range: -40°C to +85°C
- Low Cost SOIC14 Plastic Package
- Tape and Reel Packaging Available<sup>1</sup>

### Description

M/A-COM's SW-289 is a GaAs MMIC DPDT switch in a low cost SOIC 14-lead surface mount plastic package. The SW-289 is ideally suited for use where very low power consumption is required. Typical applications include transmit/receive switching, switch matrices, digital step attenuators, and filter banks in systems such as: radio and cellular equipment, PCM, GPS, fiber optic modules, and other battery powered radio equipment.

The SW-289 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-14



14-Lead SOP outline dimensions  
Narrow body .150  
(All dimensions per JEDEC No. MS-012-AB, Issue C)  
Dimensions in ( ) are in mm.  
Unless Otherwise Noted: .xxx =  $\pm 0.010$  ( .xx =  $\pm 0.25$  )  
.xxx =  $\pm 0.02$  ( .x =  $\pm 0.5$  )

### Ordering Information

Part Number	Package
SW-289 PIN	SOIC 14-Lead Plastic Package
SW-289TR	Forward Tape & Reel
SW-289RTR	Reverse Tape & Reel

### 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		0.35	0.5
	DC - 0.5 GHz	dB		0.35	0.5
	DC - 1.0 GHz	dB		0.4	0.6
	DC - 2.0 GHz	dB		0.6	0.8
Isolation	DC - 0.1 GHz	dB	50	56	
	DC - 0.1 GHz	dB	40	43	
	DC - 1.0 GHz	dB	32	35	
	DC - 2.0 GHz	dB	20	23	
VSWR	DC - 2.0 GHz		1.3:1		
Trise, Tfall Ton, Toff Transients	10% to 90% RF, 90% to 10% RF	nS		3	
	50% Control to 90% RF, 50% Control to 10% RF	nS		6	
	In Band	mV		15	
One dB Compression	Input Power 0.05 GHz	dBm		22	
	Input Power 0.5 - 2.0 GHz	dBm		27	
IP <sub>2</sub>	Measured Relative to Input Power 0.05 GHz	dBm		54	
	(for two-tone input power up to +5 dBm) 0.5 - 2.0 GHz	dBm		66	
IP <sub>3</sub>	Measured Relative to Input Power 0.05 GHz	dBm		45	
	(for two-tone input power up to +5 dBm) 0.5 - 2.0 GHz	dBm		48	

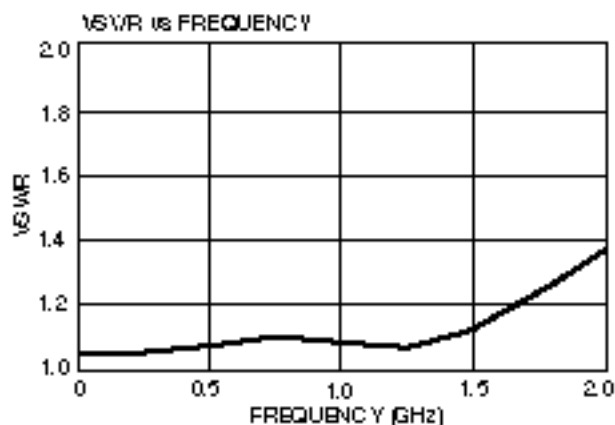
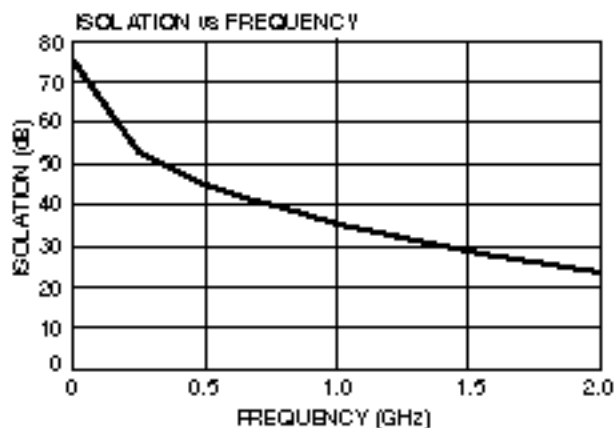
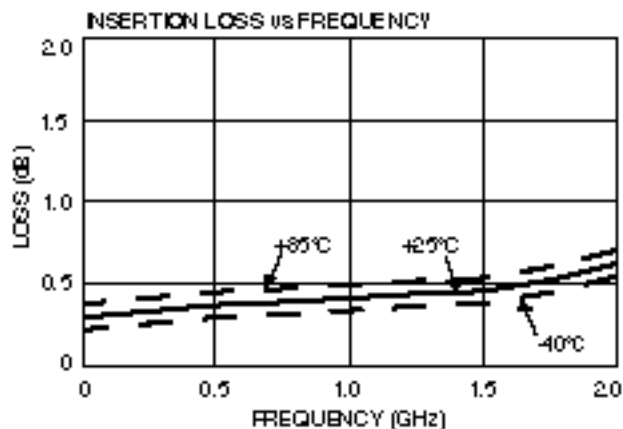
1. Refer to "Tape and Reel Packaging" section, or contact factory.  
2. All measurements with 0, -5 V control voltages at 1 GHz in a 50 $\Omega$  system, unless otherwise specified.

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

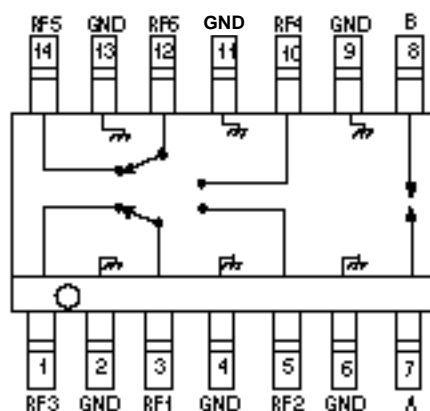
Parameter	Absolute Maximum
Max. Input Power	
0.05 GHz	+27 dBm
0.5 – 2.0 GHz	+34 dBm
Control Voltage	+5 V, -8.5 V
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C

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

## Typical Performance



## Functional Schematic



## Pin Configuration

Pin No.	Description	Pin No.	Description
1	RF3	8	B
2	GND	9	GND
3	RF1	10	RF4
4	GND	11	GND
5	RF2	12	RF6
6	GND	13	GND
7	A	14	RF5

## Truth Table

Control Input		Condition of Switch			
A	B	RF1 TO RF3		RF4 TO RF5	
		RF2	RF3	RF4	RF5
1	0	On	Off	On	Off
0	1	Off	On	Off	On

"0" – 0 – -0.2V @ 20 μA max.

"1" – -5V @ 40 μA Typ to -8V @ 900 μA max.

## Electrical Schematic

