

# GaAs SP4T Terminated Switch

## DC - 2 GHz

SW-419

### Features

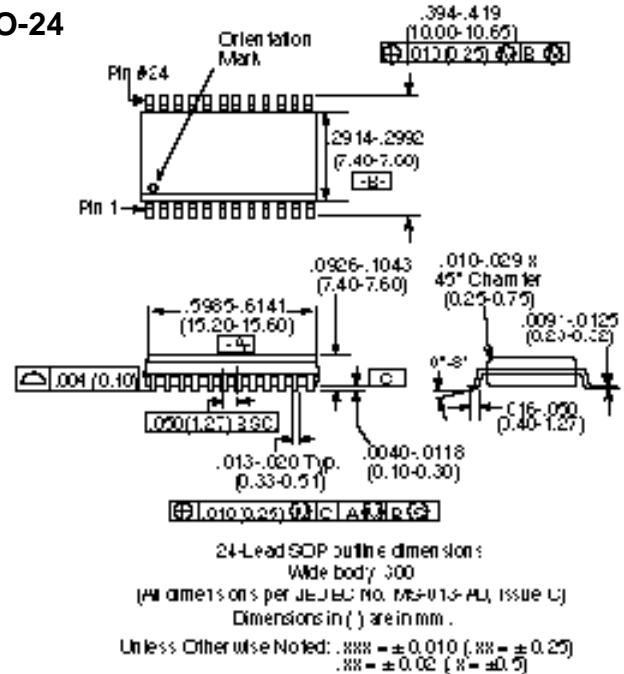
- Very Low Power Consumption: 100  $\mu$ W
- Low Insertion Loss: 1 dB
- High Isolation: 25 dB up to 2 GHz
- Very High Intercept Point: 46 dBm IP<sub>3</sub>
- Nanosecond Switching Speed
- Temperature Range: -40°C to +85°C
- Low Cost SOIC24 Plastic Package
- Tape and Reel Packaging Available<sup>1</sup>

### Description

M/A-COM's SW-419 is a GaAs MMIC SP4T terminated switch in a low cost SOIC 24-lead wide body surface mount plastic package. The SW-419 is ideally suited for use where very low power consumption is required. Typical applications include 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-419 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-24



### Ordering Information

Part No.	Package
SW-419 PIN	SOIC 24-Lead Plastic Package
SW-419 TR	Forward Tape & Reel
SW-419 RTR	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		0.8	1.0
	DC - 0.5 GHz	dB		0.8	1.1
	DC - 1.0 GHz	dB		0.9	1.2
	DC - 2.0 GHz	dB		1.2	1.4
Isolation	DC - 0.1 GHz	dB	54	60	
	DC - 0.5 GHz	dB	46	51	
	DC - 1.0 GHz	dB	36	39	
	DC - 2.0 GHz	dB	20	24	
VSWR	On			1.3:1	
	Off			1.3:1	
Trise, Tfall Ton, Toff Transients	10% to 90% RF, 90% to 10% RF	nS		8	
	50% Control to 90% RF, 50% Control to 10% RF	nS		16	
	In Band	mV		15	
One dB Compression	Input Power 0.05 GHz	dBm		21	
	Input Power 0.5 - 2.0 GHz	dBm		27	
IP <sub>2</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		60	
IP <sub>3</sub>	Measured Relative to Input Power 0.05 GHz	dBm		35	
	(for two-tone input power up to +5 dBm) 0.5 - 2.0 GHz	dBm		46	

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

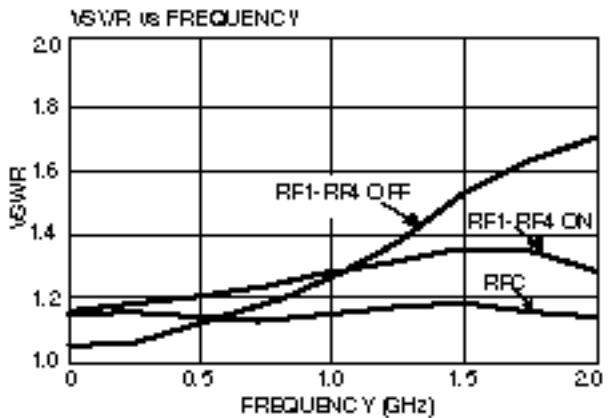
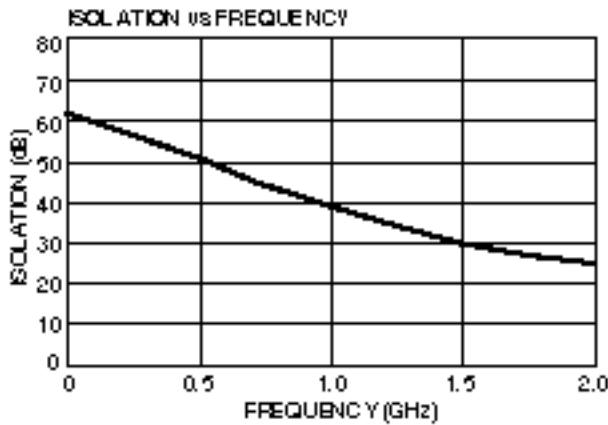
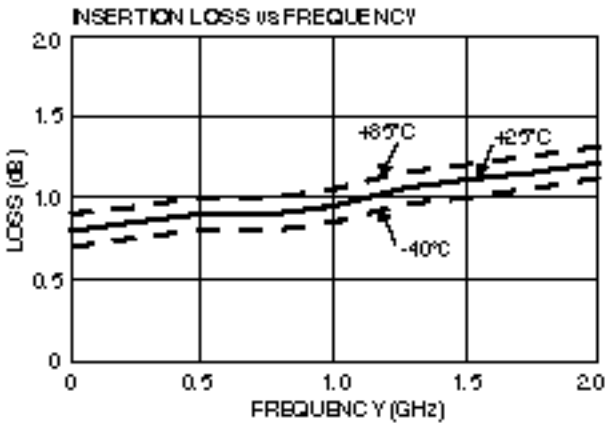
2. All measurements with 0, -5 V control voltages at 1 GHz in a 50  $\Omega$  system, unless otherwise specified.

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

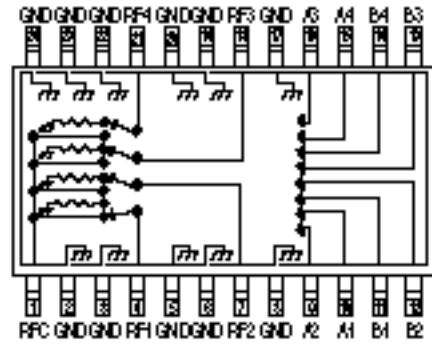
Parameter	Absolute Maximum
Max. Input Power	
Below 500 MHz	+27 dBm
Above 500 MHz	+30 dBm
Control Voltage	+5 V, -8.5 V
Storage Temperature	-65° to +150°C

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	RF Common	13	B3
2	GND	14	B4
3	GND	15	A4
4	RF1	16	A3
5	GND	17	GND
6	GND	18	RF3
7	RF2	19	GND
8	GND	20	GND
9	A2	21	RF4
10	A1	22	GND
11	B1	23	GND
12	B2	24	GND

### Truth Table

Control Input								Condition Of Switch RF Common to Each RF Port			
A1	B1	A2	B2	A3	B3	A4	B4	RF1	RF2	RF3	RF4
1	0	0	1	0	1	0	1	On	Off	Off	Off
0	1	1	0	0	1	0	1	Off	On	Off	Off
0	1	0	1	1	0	0	1	Off	Off	On	Off
0	1	0	1	0	1	1	0	Off	Off	Off	On

"0" – 0 – -0.2 V @ 20 µA max  
 "1" – -5 V @ 20 µA Typ to -8 V @ 300 µA max.

### Electrical Schematic

