GaAs SP4T Terminated Switch
DC - 2 GHz

SW-419

Features

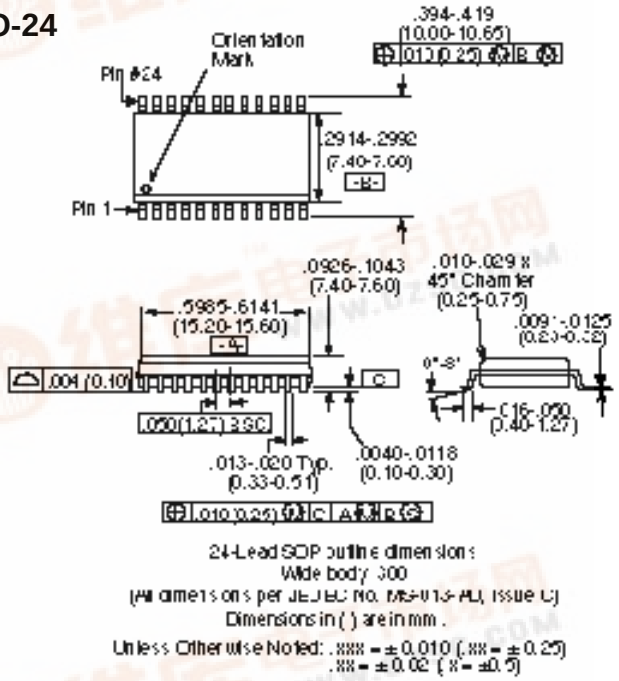
- Very Low Power Consumption: 100 µW
- Low Insertion Loss: 1 dB
- High Isolation: 25 dB up to 2 GHz
- Very High Intercept Point: 46 dBm IP_3
- Nanosecond Switching Speed
- Temperature Range: -40°C to +85°C
- Low Cost SOIC24 Plastic Package
- Tape and Reel Packaging Available[1]

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



24-Lead SOP outline dimensions
Wide body .300
(All dimensions per JEDEC No. MS-013-AD, Issue C)
Dimensions in ( ) are in mm.
Unless Otherwise Noted: .xxx = ±0.010 (.xx = ±0.25)
.xx = ±0.02 (.x = ±0.5)

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_A = +25°C

Parameter	Test Conditions[2]		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	10% to 90% RF, 90% to 10% RF		nS		8	
Ton, Toff	50% Control to 90% RF, 50% Control to 10% RF		nS		16	
Transients	In Band		mV		15	
One dB Compression	Input Power	0.05 GHz	dBm		21	
	Input Power	0.5 – 2.0 GHz	dBm		27	
IP_2	Measured Relative to Input Power (for two-tone input power up to +5 dBm)	0.05 GHz	dBm		45	
		0.5 – 2.0 GHz	dBm		60	
IP_3	Measured Relative to Input Power (for two-tone input power up to +5 dBm)	0.05 GHz	dBm		35	
		0.5 – 2.0 GHz	dBm		46	

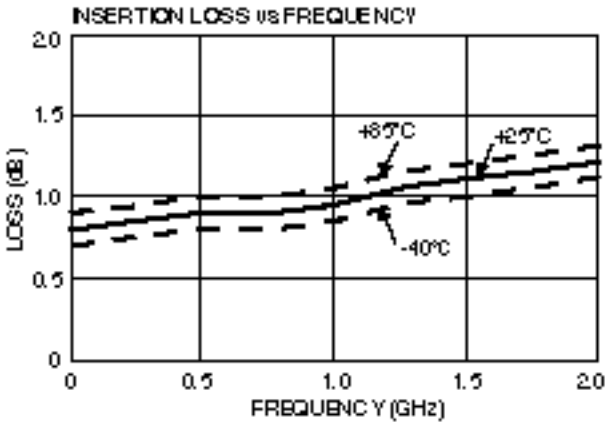
1. Refer to "Tape and Reel Packaging" Section, or contact factory.
2. All measurements with 0, -5 V control voltages at 1 GHz in a 50Ω system, unless otherwise specified.

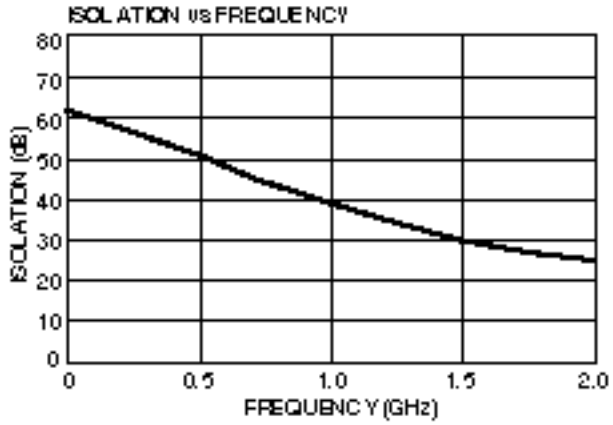
Absolute Maximum Ratings[1]

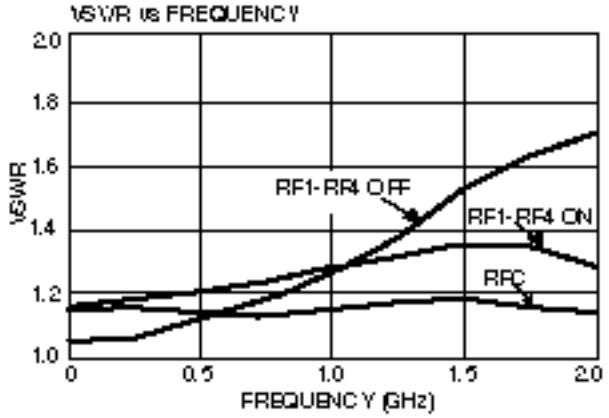
Parameter	Absolute Maximum
Max. Input Power	
Below 500 MHz	+27 dBm
Above 500 MHz	+30 dBm
Control Voltage	+5 V, – 8.5 V
Storage Temperature	-65° to +150°C

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

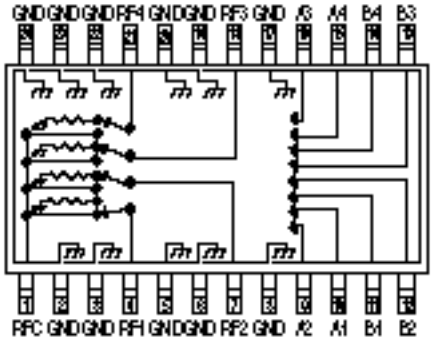
Typical Performance







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