

GaAs SPDT Switch

DC-2.5 GHz

SW-239

Features

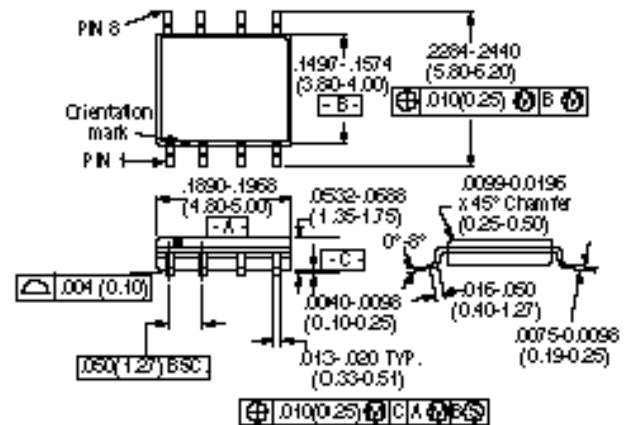
- Very Low Power Consumption: 50 μ W
- Low Insertion Loss: 0.5 dB
- High Isolation: 25 dB up to 2 GHz
- Very High Intercept Point: 46 dBm IP_3
- Nanosecond Switching Speed
- Temperature Range: -40°C to + 85°C
- Low Cost SOIC8 Plastic Package
- Tape and Reel Packaging Available!

Description

MACOM's SW-239 is a GaAs MMIC SPDT switch in a low cost SOIC 8-lead surface mount plastic package. The SW-239 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-239 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 (.xxx = ± 0.25)
xx = ± 0.02 (x = ± 0.5)

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

Parameter	Test Conditions ²	Unit	Min.	Typ.	Max.
Insertion Loss	DC - 0.1 GHz	dB		0.4	0.6
	DC - 0.5 GHz	dB		0.4	0.6
	DC - 1.0 GHz	dB		0.5	0.7
	DC - 2.0 GHz	dB		0.6	0.8
Isolation	DC - 0.1 GHz	dB	52	56	
	DC - 0.5 GHz	dB	40	43	
	DC - 1.0 GHz	dB	30	33	
	DC - 2.0 GHz	dB	22	24	
VSWR	DC - 2.0 GHz		1.2:1		
Trise, Tfall	10% to 90% RF, 90% to 10% RF	nS		2	
Ton, Toff	50% Control to 90% RF, 50% Control to 10% RF	nS		4	
Transients	In Band	mV		15	
One dB Compression Point	Input Power	0.05 GHz		21	
	Input Power	0.5 - 2.0 GHz		27	
2nd Order Intercept	Measured Relative to Input Power	0.05 GHz		55	
	(for two-tone input power up to +6 dbm)	0.5 - 2.0 GHz		68	
3rd Order Intercept	Measured Relative to Input Power	0.05 GHz		40	
	(for two-tone input power up to +6 dbm)	0.5 - 2.0 GHz		46	

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

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

SW-239 Pin
SW-239TR
SW-239RTR

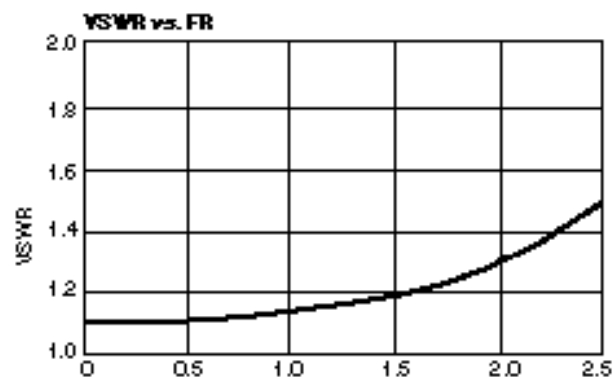
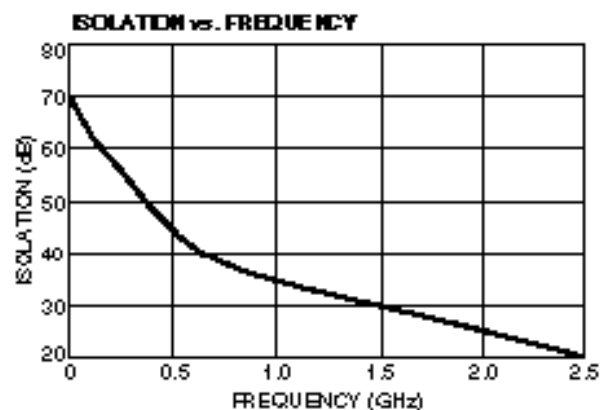
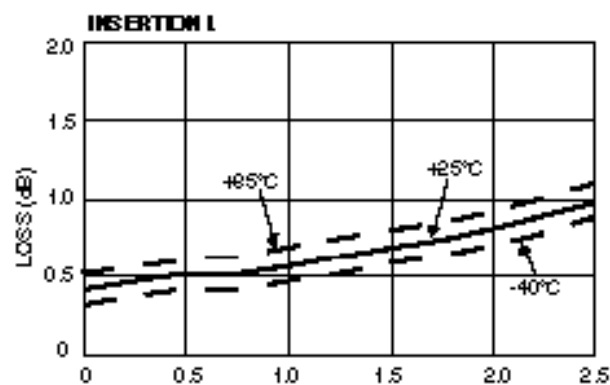
SOIC-8 Lead
Forward Tape & Reel
Reverse Tape & Reel

Absolute Maximum Ratings

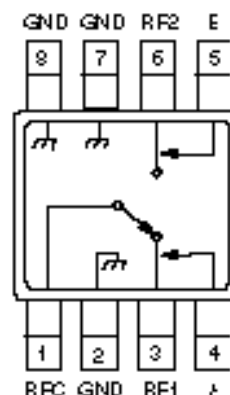
Parameter	Absolute Maximum ¹
Max. Input Power	
0.05 GHz	+27 dBm
0.5 – 2.0 GHz	+34 dBm
Control Voltage	+5V _i , -8.5V
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C

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

Typical Performance



Functional Schematic



Pin Configuration

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

Truth Table

Control Inputs		Condition of Switch	
A	B	RF Common to Each RF Port	
		RF1	RF2
1	0	On	Off
0	1	Off	On

'0' – 0 – -0.2V @ 20 μ A max.

'1' – -5V @ 20 μ A Typ to -8V @ 40 μ A max

Electrical Schematic

