



GaAs SPDT Switch DC - 3.0 GHz



Features

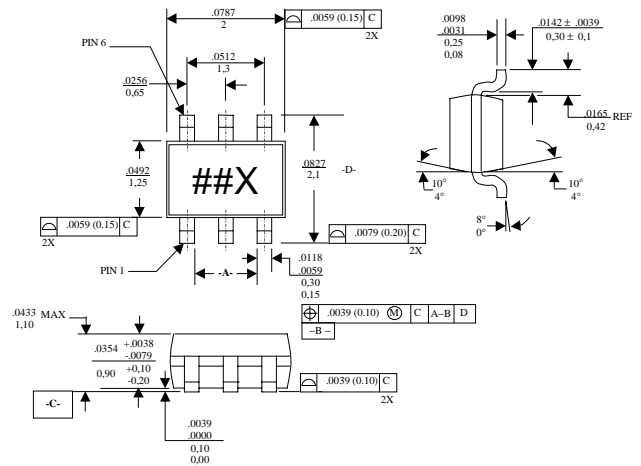
- Low Cost Plastic SOT-363 Package
- Low Insertion Loss <0.3dB @ 900 MHz
- Low Power Consumption <15µA @ +2.7V
- Positive or Negative 2.5 to 8 V Control

Description

M/A-COM's SW-437 is a GaAs monolithic switch in a low cost SOT-363 surface mount plastic package. The SW-437 is ideally suited for applications where very low power consumption, low insertion loss, very small size and low cost are required. Typical application is in dual band systems where switching between small signal components is required such as filter banks, single band LNA's, converters etc. The SW-437 can be used in applications up to 0.25 Watts in systems such as cellular, PCS, DCS1800, GSM, CDMA, W-CDMA and other analog/digital wireless communications systems.

The SW-437 is fabricated using a mature 0.8 micron GaAs MESFET process. The process features full passivation for increased performance and reliability.

SOT-363 Plastic Package¹



1. All dimensions are JEDEC MO-203-AB Issue A and are shown as in/mm.

Ordering Information

Part Number	Package
SW-437 PIN	SOT-363 Plastic Package
SW-437TR	Forward Tape and Reel ¹
SW-437RTR	Reverse Tape and Reel ¹
SW-437SMB	Sample Board

1. Reference Application Note M513 for reel size information.

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

Parameter	Test Conditions	Units	Min.	Typ.	Max.
Insertion Loss	DC - 1 GHz	dB		0.3	0.4
	1 - 2 GHz	dB		0.4	0.5
	2 - 3 GHz	dB		0.55	0.7
Isolation	DC - 1 GHz	dB	19	21	
	1 - 2 GHz	dB	13	15	
	2 - 3 GHz	dB	10	12	
VSWR	DC - 3 GHz			1.2:1	1.3:1
P_{1dB} (2.7V supply)	500 MHz - 3 GHz	dBm		24	
P_{1dB} (5V supply)	500 MHz - 3 GHz	dBm		27	
Input IP_2	2-Tone 900 MHz, 5 MHz spacing (2.7 V)	dBm		81	
Input IP_3	2-Tone 900 MHz, 5 MHz spacing (2.7 V)	dBm		55	
T_{rise} , T_{fall}	10% to 90% RF, 90% to 10% RF	ns		10	
T_{on} , T_{off}	50% Control to 90% RF, Control to 10% RF	ns		20	
Transients	In-Band	mV		10	
Gate Leakage	$V_{CTL} = 2.5 V$	µA		4	15

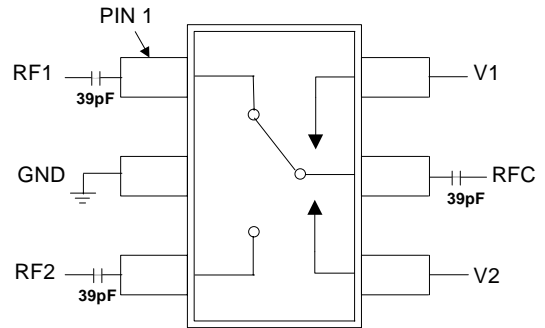


Absolute Maximum Ratings¹

Parameter	Absolute Maximum
Max. Input Power (0.5 - 3.0 GHz)	
3 V Control	+30 dBm
5 V Control	+33 dBm
Operating Voltage	+8.5 Volts
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C

1. Exceeding any one or combination of these limits may cause permanent damage.

Functional Schematic Positive Control Voltage

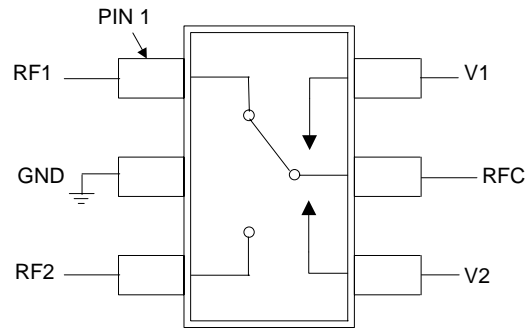


Truth Table

Mode (Control)	V1	V2	RFC - RF1	RFC - RF2
Positive ¹	0±0.2V	+2.5 to +8V	On	Off
	+2.5 to +8V	0±0.2V	Off	On
Negative ²	0±0.2V	-2.5V to -8V	Off	On
	-2.5V to -8V	0±0.2V	On	Off

- External DC blocking capacitors are required on all RF ports. 39pF capacitors used for positive control voltage.
- If negative control is used, DC blocking capacitors are not required on RF Ports.

Functional Schematic Negative Control Voltage



PIN Configuration

PIN No.	Function	Description
1	RF1	RF in/out
2	GND	RF Ground
3	RF2	RF in/out
4	V2	V Control 2
5	RFC	RF COMMON
6	V1	V Control 1

Handling Procedures

The following precautions should be observed to avoid damage:

Static Sensitivity

Gallium Arsenide Integrated Circuits are ESD sensitive and can be damaged by static electricity. Proper ESD techniques should be used when handling these devices.

Typical Performance Curves

