GaAs MMIC Low Loss SPDT Switch DC - 2.0 GHz

SW-373

V 2.00

Features

- Low Insertion Loss: 0.5 dB Typ @ 900 MHz
- Low Cost Plastic SOIC 8 Lead Package[1]
- Positive and/or Negative Control, Single Supply Voltage
- Very High Intercept Point: 55 dBm IP_3
- Very Low Power Consumption: 50 µW
- For AMPS, NAMPS, ETACS, NMT, GSM, PCN, PDC, and DECT Applications

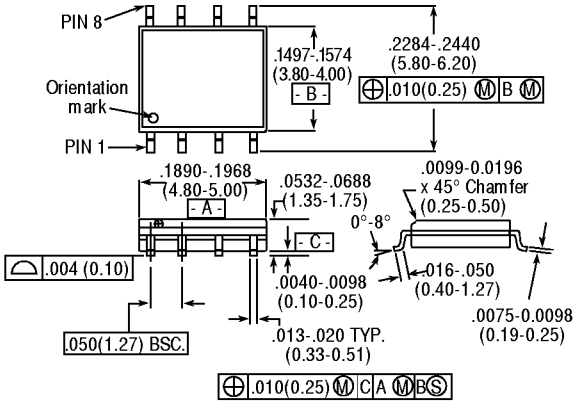
Description

The SW-373 is a GaAs MMIC SPDT switch in a low cost SOIC 8-lead surface mount plastic package.

The switch is ideally suited for use where very low distortion and low loss are required. The SW-373 can be operated with negative, positive, or a combination of positive/negative control voltages. Typical application is an internal/external antenna select switch for portable telephones and data radios. In addition, because of its low loss, good isolation and inherent speed, the SW-373 can be used as a conventional T/R switch, or as an antenna diversity switch. This switch can be used for low power applications up to 100 mW in systems such as cellular, PCM, GSM, and other analog/digital wireless communication systems.

The SW-373 is fabricated with monolithic GaAs MMICs using a mature 1 micron process. The process features full 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 (.xx = ± 0.25)
.xx = ± 0.02 (.x = ±0.5)

Ordering Information

Part Number	Package
SW-373 PIN	SOIC 8 Lead Plastic
SW-373TR	Foward Tape & Reel *
SW-373RTR	Reverse Tape & Reel *

* If specific reel size is required, consult factory for part number assignment.

Electrical Specifications, T_A= +25°C[2,3]

Parameter	Test Conditions		Units	Min.	Typ.	Max.
Insertion Loss		DC - 1.0 GHz	dB		0.45	0.7
		1.0 - 2.0 GHz	dB		1.0	1.2
Isolation		DC - 0.5 GHz	dB	25	27	
		0.5 - 1.0 GHz	dB	20	23	
		1.0 - 2.0 GHz	dB	15	17	
VSWR		DC - 1.0 GHz			1.2:1	1.3:1
		1.0 - 1.5 GHz			1.6:1	1.8:1
		1.5 - 2.0 GHz			2.4:1	2.6:1
Trise, Tfall	10%-90% RF, 90% - 10% RF		nS		<10	
Ton , Toff	50% Control to 90% RF, 50% Control to 10% RF		nS		<12	
Transients	In-Band		mV		15	
1 dB Compression	Input Power, +3V Control/Supply	0.9 GHz	dBm		14	
	Input Power, +5V Control/Supply	0.9 GHz	dBm		24	
Input IP_3	For two-tone input power up to +10 dBm (+3 V V_S)	0.9 GHz	dBm		33	
Input IP_3	For two-tone input power up to +10 dBm (+5 V V_S)	0.9 GHz	dBm		55	

1. Available in Tape and Reel packaging. Consult factory for ordering instructions.
2. All specifications apply when operated with bias voltages of 0 and +5V at 1 GHz in a 50Ω system, unless otherwise specified.
3. External DC blocking capacitors are required on all RF ports.

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Absolute Maximum Ratings[1]

Parameter	Absolute Maximum
Max. Input Power (0.5 - 2.5 GHz)	
3 V Control and Supply	+17 dBm
5 V Control and Supply	+30 dBm
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C
Thermal Resistance[2]	Θ_{jc} = 87°C/W

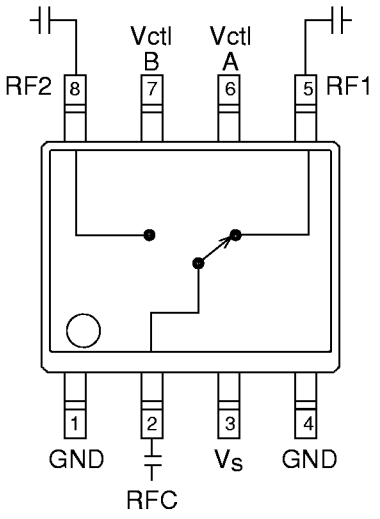
1. Operation of this device above any one of these parameters may cause permanent damage.
2. Thermal resistance is given for T_A = +25° C. Tcase is the temperature of leads 1 and 4.

Truth Table

Control Input			
VA	VB	RFC - RF1	RFC - RF2
0	1	On	Off
1	0	Off	On

0 = 0 ±0.2 V
1 = V_S ±0.2 V

Functional Schematic[3]



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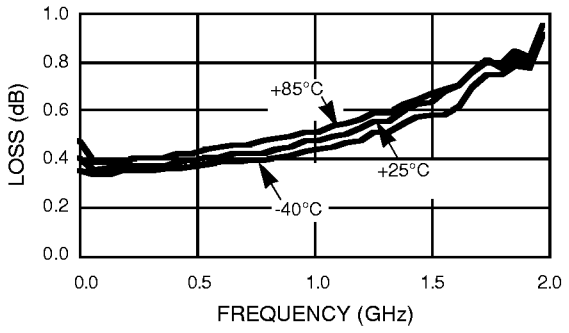
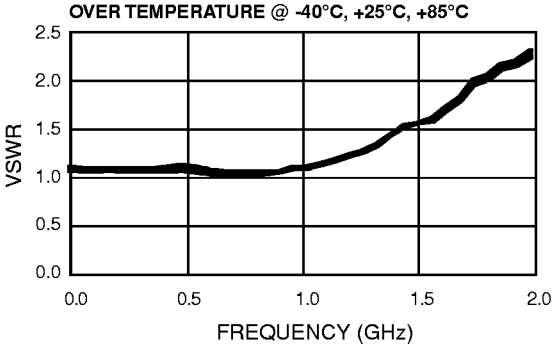
Typical Performance @ +25°C

INSERTION LOSS vs FREQUENCY
OVER TEMPERATURE



VSWR vs FREQUENCY
OVER TEMPERATURE @ -40°C, +25°C, +85°C



ISOLATION vs FREQUENCY
OVER TEMPERATURE @ -40°C, +25°C, +85°C