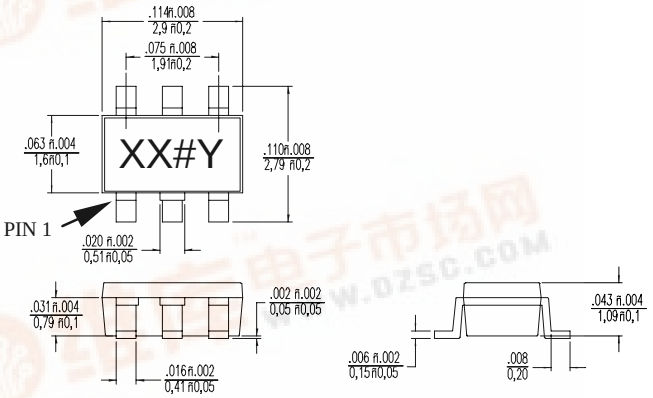
M/A-COM

3 Volt GaAs SPDT Switch
DC - 2.0 GHz

Features

- Low Insertion Loss: <0.7 dB @ 900 MHz
- Low Power Consumption: <10µA @ =3 VDC
- Very High Intercept Point: 52 dBm IP_3
- Both Positive and Negative 3 to 8 V Control
- Low Cost SOT-26 Package

SOT-26[1]



1. Dimensions are in: inches/mm

Description

M/A-COM's SW-395 is a GaAs monolithic switch in a low cost SOT-26 surface mount plastic package. The SW-395 is ideally suited for applications where very low power consumption, low intermodulation products, very small size and low cost are required. 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-395 can be used as a conventional T/R switch or as an antenna diversity switch. The SW-395 can be used in power applications up to 0.5 Watts in systems such as cellular, PCN, GSM an other analog/digital wireless communications systems.

The SW-395 is fabricated using a mature 1-micron gate length GaAs MESFET process. The process features full chip passivation for increased performance and reliability.

Ordering Information

Part Number	Package
SW-395 PIN	SOT-26 Plastic Package
SW-395TR	Forward Tape and Reel[1]

1. Refer to Application Note M513 for reel size information.

Electrical Specifications: T_A = +25°C[1]

Parameter	Test Conditions		Units	Min.	Typ.	Max.
Insertion Loss	DC - 1.0 GHz		dB		0.7	0.9
	1.0 - 2.0 GHz		dB		0.8	1.0
Isolation	DC - 1.0 GHz		dB	23	25	
	1.0 - 2.0 GHz		dB	17	19	
VSWR	DC - 2.0 GHz				1.3:1	
1 dB Compression	Input Power (3V Control)	0.5 GHz	dBm		27	
	Input Power (5V Control)	0.5 GHz	dBm		28	
	Input Power (3V Control)	0.05 GHz	dBm		16	
	Input Power (5V Control)	0.05 GHz	dBm		18	
T_{rise}, T_{fall}	10% to 90% RF, 90% to 10% RF		µS		7	
T_{on}, T_{off}	50% Control to 90% RF, Control to 10% RF		µS		8	
Transients	In-band		mV		38	
Input IP_2	2-Tone, 5 MHz spacing, 3 V Control	0.05 GHz	dBm		61	
	+10 dBm each	0.5 GHz	dBm		71	
Input IP_3	2-Tone, 5 MHz spacing, 3 V Control	0.05 GHz	dBm		48	
	+10 dBm each	0.5 GHz	dBm		52	

1. All measurements at 1 GHz in a 50Ω system with a 3V control unless otherwise specified. Loss varies at 0.003 dB/°C.

M/A-COM Division of AMP Incorporated ■ North America: Tel. (800) 366-2266, Fax (800) 618-8883 ■ Asia/Pacific: Tel.+85 2 2111 8088, Fax +85 2 2111 8087
■ Europe: Tel. +44 (1344) 869 595, Fax+44 (1344) 300 020

Absolute Maximum Ratings[1]

Parameter	Absolute Maximum
Input Power	+33 dBm
Operating Voltage	+8.5 Volts
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C

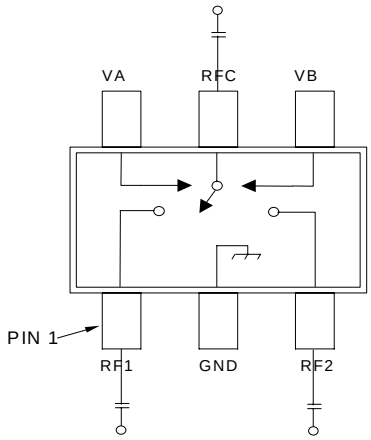
1. Exceeding any one or a combination of these limits may cause permanent damage.

Truth Table

Mode (Control)	Control A	Control B	RFC - RF1	RFC - RF2
Positive[1]	0±0.2V +3V to +8V	+3V to +8V 0±0.2V	Off On	On Off
Positive/ Negative[1,2]	-Vc±0.2V +Vc	+Vc -Vc±0.2V	On Off	Off On
Negative[3]	0±0.2V -3V to -8V	-3V to -8V 0±0.2V	On Off	Off On

1. External DC blocking capacitors are required on all RF ports.
2. $|-Vc| \leq 8$ V.
3. If negative control is used, DC blocking capacitors are not required on RF ports.

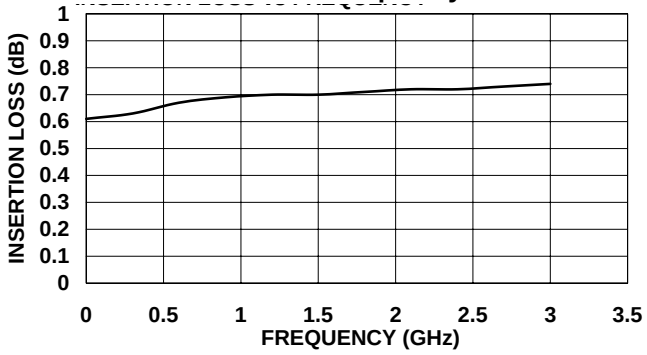
Functional Schematic[1]



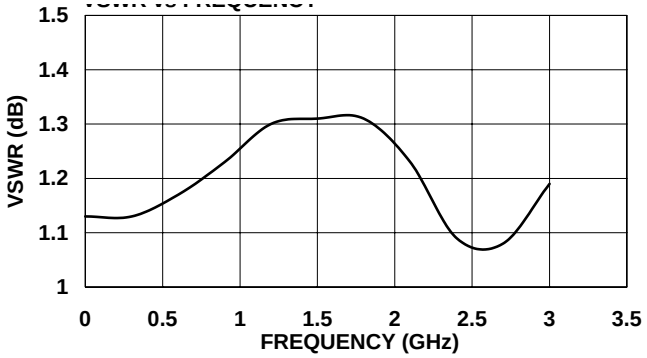
1. DC blocking capacitors not required if negative control voltage is used.

Typical Performance Curves

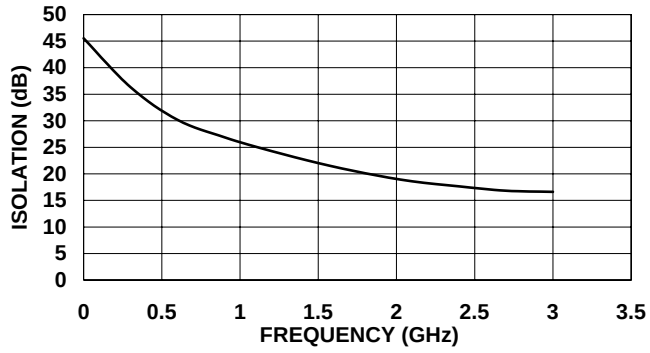
Insertion Loss vs. Frequency



VSWR vs. Frequency



Isolation vs Frequency



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