

3 V GaAs SPDT Switch DC - 2.0 GHz



Features

- Low Insertion Loss: <0.5 dB @ 900 MHz
- Low Power Consumption: <10 μA @ 3 VDC
- Very High Intercept Point: 52 dBm IP3
- Both Positive and Negative 3 to 8 V Control
- Low Cost SOT-26 Package

Description

M/A-COM's SW-395 is a GaAs single pole, double throw 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, PCS, GSM and other analog / digital wireless communications systems.

The SW-395 is fabricated using a mature 0.5-micron gate length GaAs PHEMT process. The process features full chip passivation for increased performance and reliability.

Ordering Information¹

1

Part Number	Package		
SW-395	Bulk Packaging		
SW-395TR-3000	3000 piece reel		

1. Reference Application Note M513 for reel size information.

Absolute Maximum Ratings ^{2,3}

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

2. Exceeding any one or combination of these limits may cause permanent damage to this device.

3. M/A-COM does not recommend sustained operation near these survivability limits.

Functional Schematic⁴



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

Pin Configuration

Pin No.	Function	Pin No.	Function
1	RF1	4	Control B
2	Ground	5	RF Common
3	RF2	6	Control A

Truth Table 5,6,7

Control A	Control B	RFC to RF1	RFC to RF2
0	1	Off	On
1	0	On	Off

5. For positive voltage control, external DC blocking capacitors are required on all RF ports.

6. $0 = -8 \vee to 0 \vee, 1 = 0 \vee to +8 \vee.$

7. Differential voltage, V (state 1) - V (state 0), must be +2.8 V minimum and must not exceed +8 V.

- North America Tel: 800.366.2266 / Fax: 978.366.2266
- Europe Tel: 44.1908.574.200 / Fax: 44.1908.574.300
- Asia/Pacific Tel: 81.44.844.8296 / Fax: 81.44.844.8298

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SW-395 V6

Electrical Specifications: T_A = +25°C, V_C = 0 V / -3 V, Z_0 = 50 Ω^8

Parameter	Test Conditions	Units	Min.	Тур.	Max.
Insertion Loss	DC - 1.0 GHz 1.0 - 2.0 GHz	dB dB	_	0.5 0.6	0.7 0.8
Isolation	DC - 1.0 GHz 1.0 - 2.0 GHz	dB dB	25 19	28 22	
VSWR	DC - 2.0 GHz	Ratio	—	1.3:1	—
1 dB Compression	0.5 GHz, Input Power (3 V Control) 0.5 GHz, Input Power (5 V Control) 0.05 GHz, Input Power (3 V Control) 0.05 GHz, Input Power (5 V Control)	dBm dBm dBm dBm		26 30 16 16	
Trise, Tfall	10% to 90% RF, 90% to 10% RF	μS	—	5	_
Ton, Toff	50% Control to 90% RF, 50% Control to 10% RF	μS	_	3	—
Transients	In-Band	mV	—	15	—
Input IP ₂	2-Tone, 5 MHz spacing, 3 V Control, +10 dBm each 0.05 GHz 0.5 GHz	dBm dBm	_	69 80	_
Input IP ₃	2-Tone, 5 MHz spacing, 3 V Control, +10 dBm each 0.05 GHz 0.5 GHz	dBm dBm		48 52	
Control Current	V _C = 3 V	μA	_	1	10

8. For positive voltage control, external DC blocking capacitors are required on all RF ports.

SOT-26



2

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Typical Performance Curves







VSWR



3

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