



# GaAs SPDT High Isolation Terminated Switch

## Features

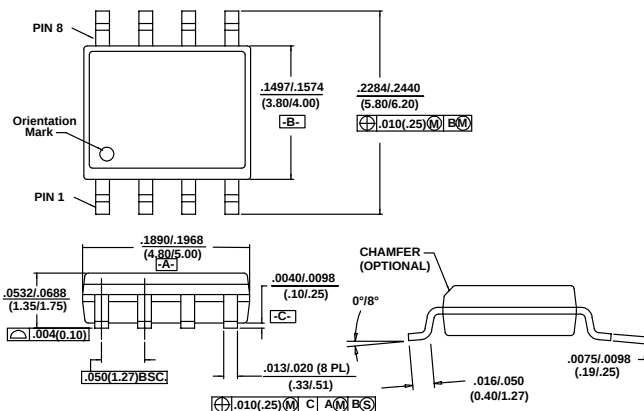
- Terminated RF Output
- High Isolation: 35 dB upto 2 GHz
- Positive Control
- Nanosecond Switching Speed
- CMOS Compatible Logic
- Low Cost SOIC 8 Plastic Package

## Description

M/A-COM's SW-394 is a GaAs monolithic SPDT terminated switch in a low cost SOIC 8-lead plastic package. The SW-394 is ideally suited for use where low power consumption and high isolation are required. Typical applications include transmit/receive switching, switch matrices and switched filter banks in systems such as radio and cellular equipment.

The SW-394 is fabricated using a mature 1-micron gate length GaAs MESFET process. The process features full chip passivation for increased performance and reliability.

## SOIC-8<sup>1</sup>



1. Dimensions are in: inches/mm

## Ordering Information

| Part Number | Package                     |
|-------------|-----------------------------|
| SW-394 PIN  | SOIC 8-Lead Plastic Package |
| SW-394TR    | Tape and Reel <sup>1</sup>  |

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

## Electrical Specifications: $T_A = +25^\circ\text{C}$ <sup>1</sup>

| Parameter                          | Test Conditions                          | Units         | Min. | Typ.  | Max. |
|------------------------------------|------------------------------------------|---------------|------|-------|------|
| Insertion Loss                     | 0.5 - 2.0 GHz                            | dB            |      | 1.3   | 1.5  |
| Isolation                          | 0.5 - 1.0 GHz                            | dB            | 37   | 40    |      |
|                                    | 1.0 - 2.0 GHz                            | dB            | 32   | 35    |      |
| VSWR                               | 0.5 - 1.5 GHz                            |               |      | 1.6:1 |      |
| 1 dB Compression                   | Input Power, +5V Control/Supply          |               |      |       |      |
|                                    | 0.5 GHz                                  | dBm           |      | 24    |      |
|                                    | 0.9 GHz                                  | dBm           |      | 24    |      |
|                                    | 1.5 GHz                                  | dBm           |      | 25    |      |
| $T_{\text{rise}}, T_{\text{fall}}$ | 10% to 90% RF, 90% to 10% RF             | $\mu\text{s}$ |      | 34    |      |
| $T_{\text{on}}, T_{\text{off}}$    | 50% Control to 90% RF, Control to 10% RF | $\mu\text{s}$ |      | 36    |      |
| Transients                         | In-band                                  | mV            |      | 22    |      |
| Input $IP_2$                       | 2-Tone, 5 MHz spacing,                   |               |      |       |      |
|                                    | +10 dBm each                             | dBm           |      | 67    |      |
| Input $IP_3$                       | 2-Tone, 5 MHz spacing,                   |               |      |       |      |
|                                    | +10 dBm each                             | dBm           |      | 47    |      |

1. All measurements taken at 900 MHz in a 50 $\Omega$  system unless otherwise specified. Loss varies at 0.003 dB/ $^\circ\text{C}$ .

Specifications subject to change without notice.

- **North America:** Tel. (800) 366-2266, Fax (800) 618-8883
- **Asia/Pacific:** Tel. +81-44-844-8296, Fax +81-44-844-8298
- **Europe:** Tel. +44 (1344) 869 595, Fax +44 (1344) 300 020

Visit [www.macom.com](http://www.macom.com) for additional data sheets and product information.

**tyco** / Electronics



## Absolute Maximum Ratings<sup>1</sup>

| Parameter                                  | Absolute Maximum |
|--------------------------------------------|------------------|
| Input Power                                | +34 dBm          |
| Operating Voltage( $V_S$ , $V_A$ , $V_B$ ) | +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

| Control Input A | Control Input B | RFC - RF2 | RFC - RF1 |
|-----------------|-----------------|-----------|-----------|
| 0               | 1               | Off       | On        |
| 1               | 0               | On        | Off       |

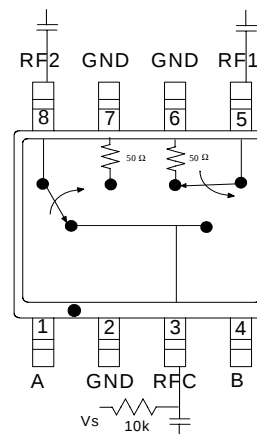
"0" =  $\pm 0.2$  Vdc

"1" =  $+5 \pm 0.2$  Vdc

$V_S$  =  $+5 \pm 0.2$  Vdc

30  $\mu$ A max. current total

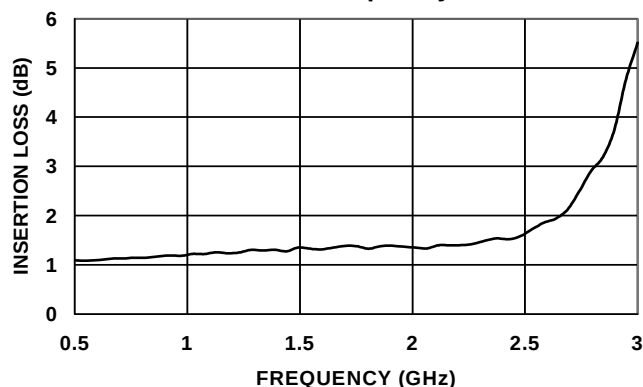
## Functional Schematic<sup>1</sup>



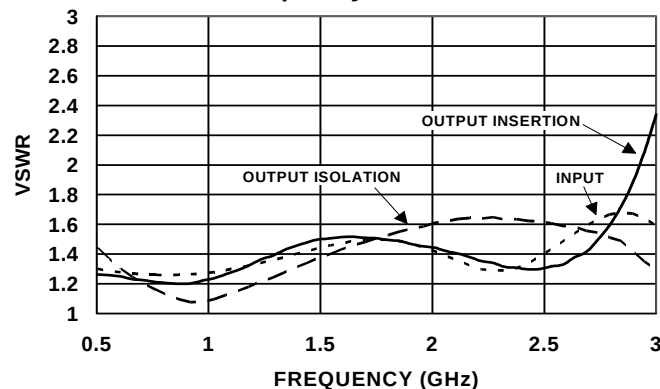
1. Blocking capacitors are required on all RF ports.  $V_S$  can be applied at any RF port using 10K or greater pull-up resistor.

## Typical Performance Curves

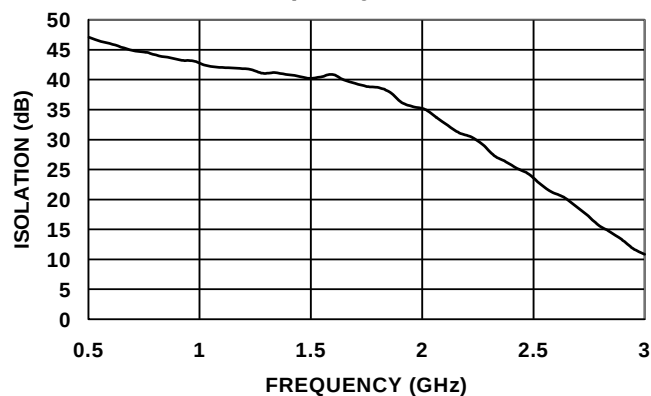
Insertion Loss vs. Frequency



VSWR vs. Frequency



Isolation vs Frequency



Specifications subject to change without notice.

■ **North America:** Tel. (800) 366-2266, Fax (800) 618-8883  
 ■ **Asia/Pacific:** Tel.+81-44-844-8296, Fax +81-44-844-8298  
 ■ **Europe:** Tel. +44 (1344) 869 595, Fax+44 (1344) 300 020

Visit [www.macom.com](http://www.macom.com) for additional data sheets and product information.