

Features

- Low Insertion Loss: <0.5 dB @ 900 MHz
- Low Power Consumption: <10 μ A @ 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 Information ¹

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

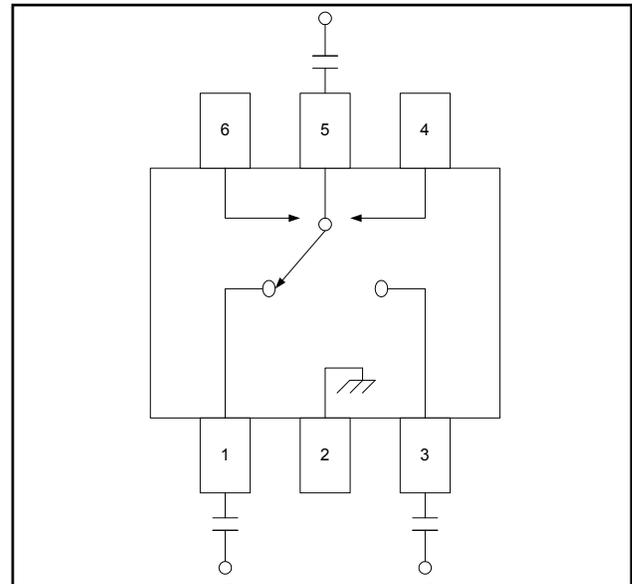
1. Reference Application Note M513 for reel size information.

Truth Table ^{2,3,4}

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

2. For positive voltage control, external DC blocking capacitors are required on all RF ports.
3. 0 = -8 V to 0 V, 1 = 0 V to +8 V.
4. Differential voltage, V (state 1) - V (state 0), must be +2.8 V minimum and must not exceed +8 V.

Functional Schematic ⁵



5. 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 |

Absolute Maximum Ratings ^{6,7}

| 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 |

6. Exceeding any one or combination of these limits may cause permanent damage to this device.
7. M/A-COM does not recommend sustained operation near these survivability limits.

3 V GaAs SPDT Switch DC - 2.0 GHz

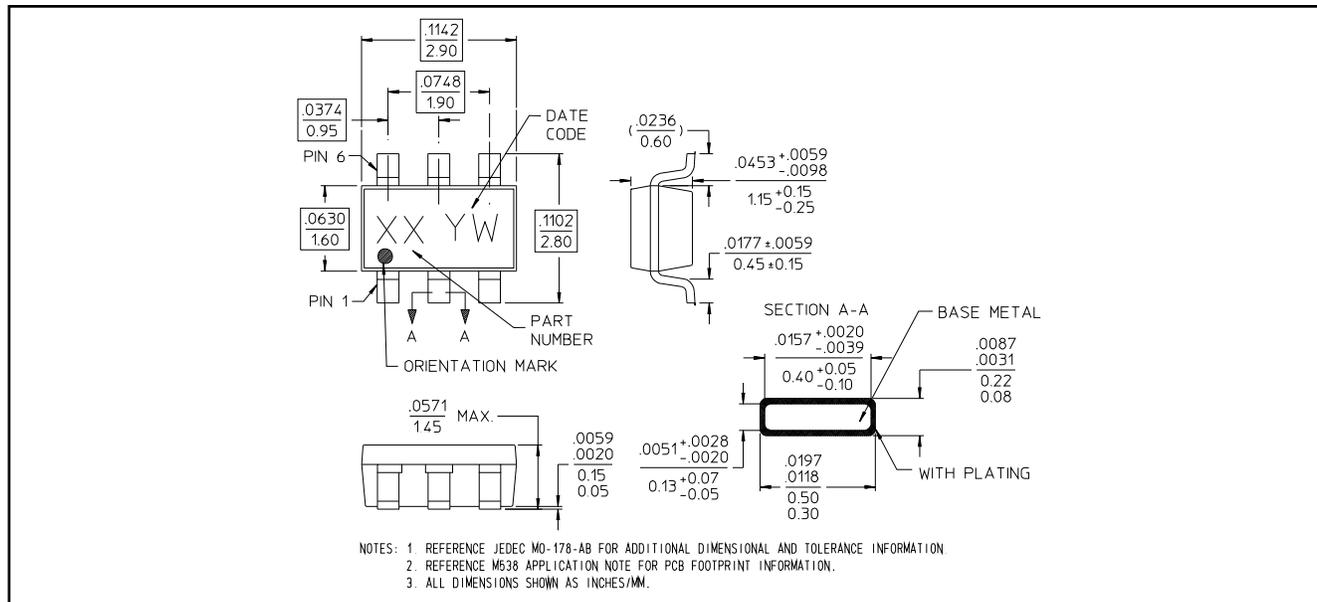
Rev. V7

Electrical Specifications: $T_A = +25^\circ\text{C}$, $V_C = 0\text{ V} / -3\text{ V}$, $Z_0 = 50\ \Omega$ ⁸

| Parameter | Test Conditions | Units | Min. | Typ. | Max. |
|------------------|--|---------------|------|-------|------|
| Insertion Loss | DC - 1.0 GHz | dB | — | 0.5 | 0.7 |
| | 1.0 - 2.0 GHz | dB | — | 0.6 | 0.8 |
| Isolation | DC - 1.0 GHz | dB | 25 | 28 | — |
| | 1.0 - 2.0 GHz | dB | 19 | 22 | — |
| VSWR | DC - 2.0 GHz | Ratio | — | 1.3:1 | — |
| 1 dB Compression | 0.5 GHz, Input Power (3 V Control) | dBm | — | 26 | — |
| | 0.5 GHz, Input Power (5 V Control) | dBm | — | 30 | — |
| | 0.05 GHz, Input Power (3 V Control) | dBm | — | 16 | — |
| | 0.05 GHz, Input Power (5 V Control) | dBm | — | 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 | dBm | — | 69 | — |
| | 0.05 GHz 0.5 GHz | dBm | — | 80 | — |
| Input IP_3 | 2-Tone, 5 MHz spacing, 3 V Control, +10 dBm each | dBm | — | 48 | — |
| | 0.05 GHz 0.5 GHz | dBm | — | 52 | — |
| Control Current | $ V_C = 3\text{ V}$ | μA | — | 1 | 10 |

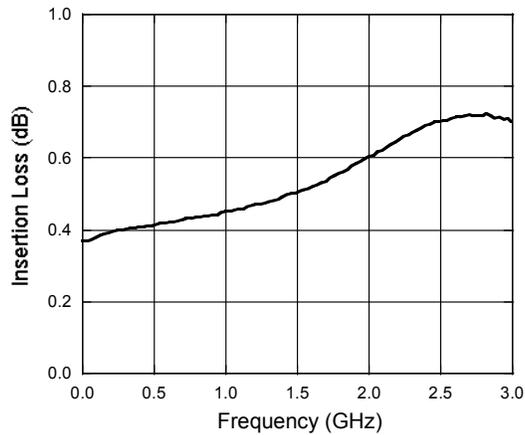
8. For positive voltage control, external DC blocking capacitors are required on all RF ports.

SOT-26

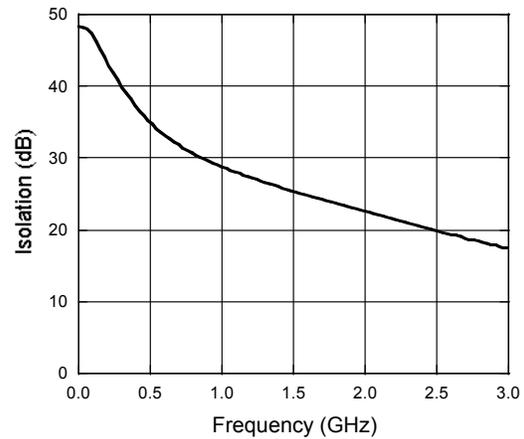


Typical Performance Curves

Insertion Loss



Isolation



VSWR

