GaAs SPDT Svitch
$0.05-3.0 \mathrm{GHz}$

## Features

- Low Insertion Loss: 0.3 dB Typ. @ 2.4 GHz
- Isolation: 21 dB @ 2.4 GHz
- Low Power Consumption: <5 $\mu \mathrm{A} @+2.3 \mathrm{~V}$
- Low Cost Plastic SOT-363 Package


## Description

M/A-COM's SW-485 is a GaAs PHEMT MMIC SPDT switch in a low cost SC-70 (SOT-363) surface mount plastic package. The SW-485 is ideally suited for applications where very small size and low cost are required. Typical applications are dual band systems where switching between small signal components are required such as filter banks, single-band LNAs, converters, etc. This part can be used for low power, low loss requirements in all systems operating up to 3 GHz , including PCS, GSM, DCS, Blue Tooth, and other Rx chain applications.

The SW-485 is fabricated using a 0.5 micron gate length GaAs PHEMT process. The process features full passivation for performance and reliability.

## Ordering Information ${ }^{1}$

| Part Number | Package |
| :---: | :---: |
| SW-485 | Bulk Packaging |
| SW-485TR-3000 | 3000 piece reel |
| SW-485SMB | Sample Board (Includes 5 Samples) |

1. Reference Application Note M513 for reel size information.

## Truth Table ${ }^{2}$

| Mode <br> (Control) | Control <br> V1 | Control <br> V2 | RFC-RF1 | RFC-RF2 |
| :---: | :---: | :---: | :---: | :---: |
| Positive $^{2}$ | $0 \pm 0.2 \mathrm{~V}$ <br> +2.3 to +5 V | 2.3 to +5 V <br> $0 \pm 0.2 \mathrm{~V}$ | On | Off | | Off |
| :---: |
| On |

2. External DC blocking capacitors are required on all RF ports.

## Functional Schematic



## Pin Configuration

| Pin No. | Function | Description |
| :---: | :---: | :---: |
| 1 | RF1 | RF Port 1 |
| 2 | GND | Ground |
| 3 | RF2 | RF Port 2 |
| 4 | V2 | Control 2 |
| 5 | RFC | RF Input |
| 6 | V1 | Control 1 |

## Absolute Maximum Ratings ${ }^{3}$

| Parameter | Absolute Maximum |
| :---: | :---: |
| Input Power (0.5-3.0 GHz) | +32 dBm |
| 3 V Control |  |
| 5 V Control | +34 dBm |
| Operating Voltage | +8.5 volts |
| Operating Temperature | $-40^{\circ} \mathrm{C}$ to $+85^{\circ} \mathrm{C}$ |
| Storage Temperature | $-65^{\circ} \mathrm{C}$ to $+150^{\circ} \mathrm{C}$ |

3. Exceeding any one or combination of these limits may cause permanent damage to this device.
$\begin{array}{ll}\text { - North America Tel: } 800.366 .2266 & \text { - Europe Tel: }+353.21 .244 .6400 \\ \text { - India Tel: }+91.80 .43537383 & \text { - China Tel: }+86.21 .2407 .1588\end{array}$
Visit ww.macomtech.com for additional data sheets and product information.
M/A-COM Technology Solutions Inc. and its affiliates reserve the right to make changes to the product(s) or information contained herein without notice.

## GaAs SPDT Svitch

$0.05-3.0 \mathrm{GH} \mathrm{Z}$
Electrical Specifications: $\mathrm{T}_{\mathrm{A}}=25^{\circ} \mathrm{C}, \mathrm{Z}_{0}=50 \Omega^{4}$

| Parameter | Test Conditions | Units | Min | Typ | Max |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Insertion Loss | $\begin{aligned} & 0.05-1.0 \mathrm{GHz} \\ & 0.05-3.0 \mathrm{GHz} \end{aligned}$ | $\mathrm{dB}$ $\mathrm{dB}$ | — | $\begin{aligned} & 0.25 \\ & 0.35 \end{aligned}$ | $\begin{aligned} & 0.40 \\ & 0.55 \end{aligned}$ |
| Isolation | $\begin{aligned} & 0.05-1.0 \mathrm{GHz} \\ & 0.05-3.0 \mathrm{GHz} \end{aligned}$ | $\begin{aligned} & \mathrm{dB} \\ & \mathrm{~dB} \end{aligned}$ | $\begin{aligned} & 20 \\ & 20 \end{aligned}$ | $\begin{aligned} & 23 \\ & 21 \end{aligned}$ | - |
| VSWR | $0.05-3.0 \mathrm{GHz}$ | Ratio | - | 1.1:1 | 1.2:1 |
| IP2 | Two Tone $+5 \mathrm{dBm}, 5 \mathrm{MHz}$ Spacing, $>50 \mathrm{MHz}$ | dBm | - | 90 | - |
| IP3 | Two Tone $+5 \mathrm{dBm}, 5 \mathrm{MHz}$ Spacing, >50 MHz | dBm | - | 46 | - |
| P1dB | $\begin{aligned} & \mathrm{Vc}=0.2 \mathrm{~V} / 2.5 \mathrm{~V} \\ & \mathrm{Vc}=0.2 \mathrm{~V} / 3.0 \mathrm{~V} \end{aligned}$ | dBm dBm | — | $\begin{aligned} & 21 \\ & 25 \end{aligned}$ | - |
| Trise, Tfall | 10\% to $90 \%$ RF and $90 \%$ to $10 \% \mathrm{RF}$ | nS | - | 35 | - |
| Ton, Toff | - | nS | - | 40 | - |
| Transients | - | mV | - | 10 | - |

4. Insertion loss can be optimized by varying the DC blocking capacitor value, e.g. 1000 pF for $100 \mathrm{MHz}-1 \mathrm{GHz}, 39 \mathrm{pF}$ for $0.5 \mathrm{GHz}-3 \mathrm{GHz}$.

SC-70 (SOT-363) Plastic Package


## Handling Procedures

Please observe the following precautions to avoid damage:

## Static Sensitivity

Gallium Arsenide Integrated Circuits are sensitive to electrostatic discharge (ESD) and can be damaged by static electricity. Proper ESD control techniques should be used when handling these devices.

- North America Tel: 800.366.2266 • Europe Tel: +353.21.244.6400
- India Tel: +91.80.43537383 - China Tel: +86.21.2407.1588

Visit ww.macomtech.com for additional data sheets and product information.
M/A-COM Technology Solutions Inc. and its affiliates reserve the right to make changes to the product(s) or information contained herein without notice.

## Typical Performance Curves

Insertion Loss, 39 pF


Isolation, 39 pF


VSWR, 39 pF


Insertion Loss, 1000 pF


Isolation, 1000 pF


VSWR, 1000 pF


ADVANCED: Data Sheets contain information regarding a product M/A-COM Technology Solutions is considering for development. Performance is based on target specifications, simulated results, and/or prototype measurements. Commitment to develop is not guaranteed.
PRELIMINARY: Data Sheets contain information regarding a product M/A-COM Technology
Solutions has under development. Performance is based on engineering tests. Specifications are typical. Mechanical outline has been fixed. Engineering samples and/or test data may be available Commitment to produce in volume is not guaranteed.

- North America Tel: 800.366.2266 • Europe Tel: +353.21.244.6400
- India Tel: +91.80.43537383 - China Tel: +86.21.2407.1588 Visit ww.macomtech.com for additional data sheets and product information.

