

## Features

- Low Insertion Loss: 0.4 dB @ 2.4 GHz
- Moderate Isolation: 27 dB @ 2.4 GHz
- Low Power Consumption: 5  $\mu$ A @ +3.0 V
- Lead-Free SC-70 (SOT-363) Package
- 100% Matte Tin Plating over Copper
- Halogen-Free "Green" Mold Compound
- RoHS\* Compliant and 260°C Reflow Compatible

## Description

M/A-COM's MASWSS0136 is a GaAs PHEMT MMIC SPDT switch in a lead-free SC-70 (SOT-363) surface mount plastic package. The MASWSS0136 is ideally suited for applications where very small size and low cost are required.

Typical applications are transmit / receive (Tx / Rx) switching in linear systems such as WLAN 802.11b/g. Other applications include 1.9 GHz and 2.4 GHz DECT and linear systems operating up to 3.0 GHz.

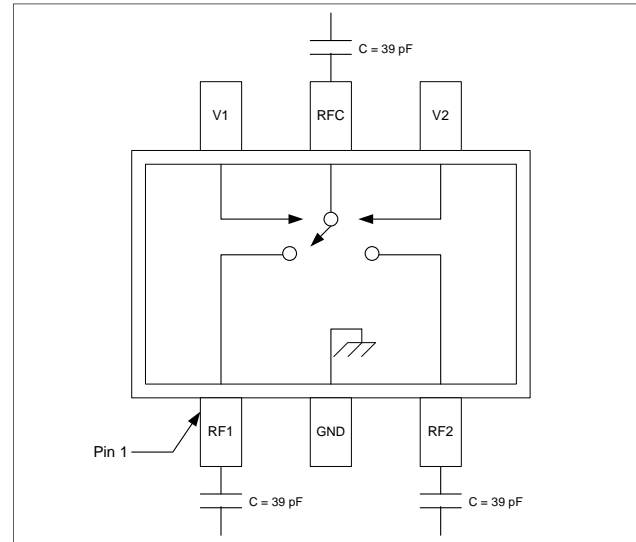
The MASWSS0136 is fabricated using a 0.5 micron gate length GaAs PHEMT process. The process features full passivation for performance and reliability.

## Ordering Information<sup>1</sup>

Part Number	Package
MASWSS0136	Bulk packaging
MASWSS0136TR-3000	3000 piece reel
MASWSS0136SMB	Sample Board

1. Reference Application Note M513 for reel size information.

## Functional Schematic



## Pin Configuration

Pin No.	Pin Name	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<sup>2,3</sup>

Parameter	Absolute Maximum
Input Power (0.5 - 3.0 GHz) 3 V Control	+30 dBm
Voltage	-8.5 V $\leq$ Vc $\leq$ +8.5 V
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°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.

\* Restrictions on Hazardous Substances, European Union Directive 2002/95/EC.

## GaAs SPDT Switch DC - 3.0 GHz

Rev. V2

### Electrical Specifications: $T_A = 25^\circ\text{C}$ , $V_C = 0\text{ V} / 3\text{ V}$ , $Z_0 = 50\ \Omega$ <sup>4</sup>

Parameter	Test Conditions	Units	Min.	Typ.	Max.
Insertion Loss <sup>5</sup>	1.0 GHz	dB	—	0.3	—
	2.4 GHz	dB	—	0.4	0.5
Isolation	1.0 GHz	dB	—	24	—
	2.4 GHz	dB	25	27	—
VSWR	0.05 - 3.0 GHz	Ratio	—	1.2:1	—
IP2	Two Tone, +5 dBm / Tone, 5 MHz Spacing 2.4 GHz	dBm	—	80	—
IP3	Two Tone, +5 dBm / Tone, 5 MHz Spacing 2.4 GHz	dBm	—	48	—
Linear Pout	2.5 GHz, OFDM, QAM-64, 54Mbps, EVM=2.5%	3.0 V	dBm	—	22.5
		3.3 V	dBm	—	24.0
		5.0 V	dBm	—	28.5
P1dB	—	dBm	—	28	—
Trise, Tfall	10% to 90% RF and 90% to 10% RF	nS	—	35	—
Ton, Toff	50% control to 90% RF, 50% control to 10% RF	nS	—	40	—
Transients	—	mV	—	10	—
Current	$V_C = 3.0\text{ V}$	$\mu\text{A}$	—	5	10

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

5. Insertion Loss can be optimized by varying the DC blocking capacitor value, e.g. 1000 pF for 100 MHz – 1.0 GHz, 39 pF for 0.5 - 3.0 GHz.

### Truth Table<sup>6,7</sup>

Control V1	Control V2	RFC-RF1	RFC-RF2
0	1	On	Off
1	0	Off	On

6. Differential voltage,  $V$  (state 1) -  $V$  (state 0), must be +2.3 V minimum and must not exceed 8.5 V.

7. 0 = 0 V  $\pm$  0.2 V, 1 = +2.5 V to 5.0 V

### Qualification

Qualified to M/A-COM specification REL-201, Process Flow -2.

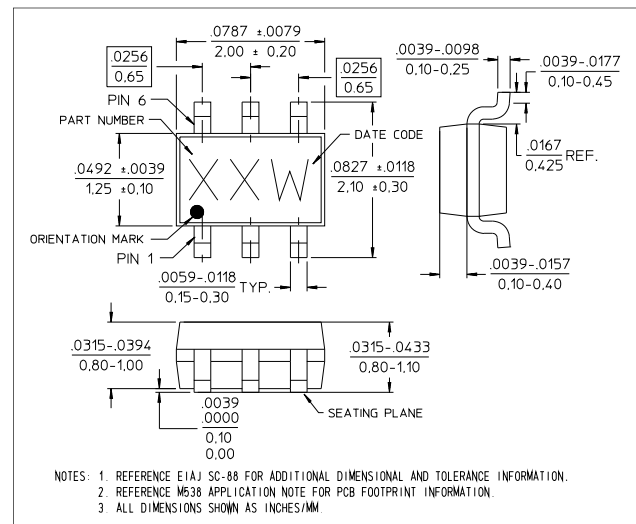
### Handling Procedures

The following precautions should be observed 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.

### Lead-Free SC-70 (SOT-363)<sup>†</sup>



<sup>†</sup> Reference Application Note M538 for lead-free solder reflow recommendations.

Meets JEDEC moisture sensitivity level 1 requirements.

**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.

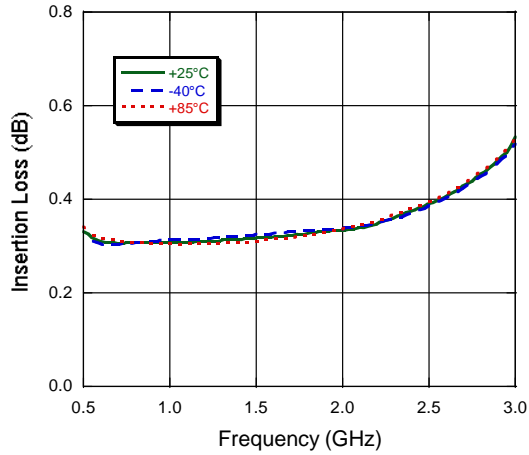
- **North America** Tel: 800.366.2266 / Fax: 978.366.2266
- **Europe** Tel: 44.1908.574.200 / Fax: 44.1908.574.300
- **Asia/Pacific** Tel: 81.44.844.8296 / Fax: 81.44.844.8298

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

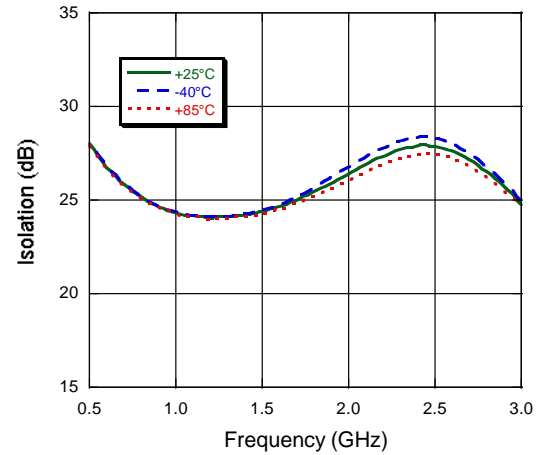
M/A-COM Technology Solutions Inc. and its affiliates reserve the right to make changes to the product(s) or information contained herein without notice.

## Typical Performance Curves

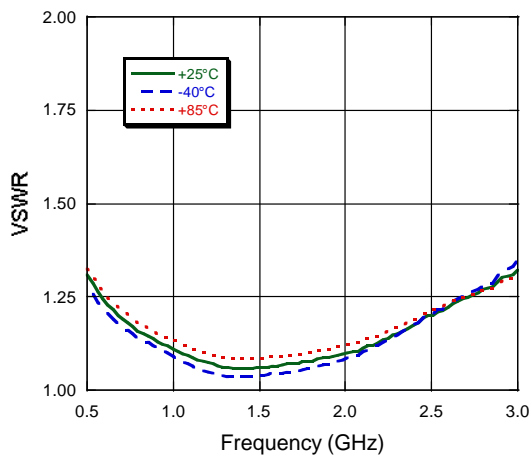
**Insertion Loss**



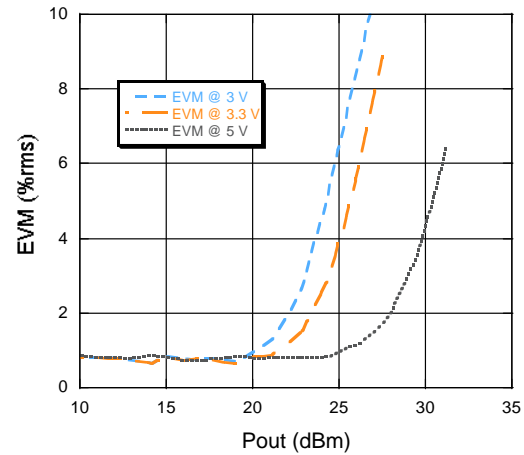
**Isolation**



**VSWR**



**EVM vs. Pout @ 2.5 GHz**





Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

**Телефон:** 8 (812) 309 58 32 (многоканальный)

**Факс:** 8 (812) 320-02-42

**Электронная почта:** [org@eplast1.ru](mailto:org@eplast1.ru)

**Адрес:** 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.