

Features

- 802.11a + b/g Dual Band Applications
- Broadband Performance: DC - 6.0 GHz
- Low Insertion Loss: 0.75 dB @ 5.8 GHz
- High Isolation: 22 dB @ 5.8 GHz
- Fast Switching Speed: 0.5 μ m GaAs PHEMT
- Lead-Free 3 mm 12-Lead PQFN Package
- 100% Matte Tin Plating over Copper
- Halogen-Free "Green" Mold Compound
- 260°C Reflow Compatible
- RoHS* Compliant Version of MASWSS0070

Description

M/A-COM's MASWSS0202 is a broadband GaAs PHEMT MMIC SPDT switch in a lead-free 3 mm 12-lead PQFN package. The MASWSS0202 is ideally suited for applications where very small size and low cost are required.

Typical applications are for WLAN IEEE 802.11a and 802.11b/g PC cards and access points. Other applications include cordless phones and base stations. Designed for high power, this SPDT switch maintains high linearity up to 6.0 GHz.

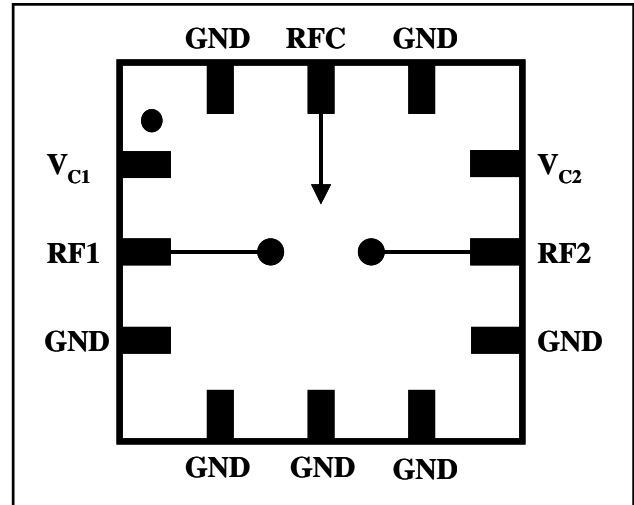
The MASWSS0202 is fabricated using a 0.5 micron gate length GaAs PHEMT process. The process features full passivation for performance and reliability.

Ordering Information ¹

| Part Number | Package |
|-------------------|---|
| MASWSS0202TR-3000 | 3000 piece reel |
| MASWSS0202SMB | Sample Test Board (Includes 5 Samples) |

1. Reference Application Note M513 for reel size information.

Functional Schematic



Pin Configuration ²

| Pin No. | Pin Name | Description |
|---------|---------------------|------------------|
| 1 | V _{C1} | Control 1 |
| 2 | RF1 | RF Port |
| 3 | GND | Ground |
| 4 | GND | Ground |
| 5 | GND | Ground |
| 6 | GND | Ground |
| 7 | GND | Ground |
| 8 | RF2 | RF Port |
| 9 | V _{C2} | Control 2 |
| 10 | GND | Ground |
| 11 | RFC | RF Port |
| 12 | GND | Ground |
| 13 | Paddle ² | RF and DC Ground |

2. The exposed pad centered on the package bottom must be connected to RF and DC ground.

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

GaAs Broadband SPDT Switch DC - 6.0 GHz

Rev. V1

Electrical Specifications: $T_A = 25^\circ\text{C}$, $Z_0 = 50 \Omega$, $V_C = 0 \text{ V} / 3 \text{ V}$, 8 pF Capacitor³

| Parameter | Test Conditions | Units | Min. | Typ. | Max. |
|-----------------------------|---|---------------|------|------|------|
| Insertion Loss ⁴ | 2 - 3 GHz | dB | — | 0.55 | 0.9 |
| | 3 - 4 GHz | dB | — | 0.55 | 0.9 |
| | 4 - 5 GHz | dB | — | 0.65 | 1.0 |
| | 5 - 6 GHz | dB | — | 0.75 | 1.1 |
| Isolation | 2 - 6 GHz | dB | 22 | 25 | — |
| Return Loss | DC - 6 GHz | dB | — | 20 | — |
| IIP2 | Two Tone, +5 dBm / Tone, 5 MHz Spacing $V_C = 0.0 \text{ V} / 3 \text{ V} @ 2.4 \text{ GHz}$ | dBm | — | 91 | — |
| | $V_C = 0.0 \text{ V} / 3 \text{ V} @ 5.8 \text{ GHz}$ | dBm | — | 81 | — |
| | $V_C = 0.0 \text{ V} / 5 \text{ V} @ 2.4 \text{ GHz}$ | dBm | — | 99 | — |
| | $V_C = 0.0 \text{ V} / 5 \text{ V} @ 5.8 \text{ GHz}$ | dBm | — | 91 | — |
| IIP3 | Two Tone, +5 dBm / Tone, 5 MHz Spacing $V_C = 0.0 \text{ V} / 3 \text{ V} @ 2.4 \text{ GHz}$ | dBm | — | 52 | — |
| | $V_C = 0.0 \text{ V} / 3 \text{ V} @ 5.8 \text{ GHz}$ | dBm | — | 50 | — |
| | $V_C = 0.0 \text{ V} / 5 \text{ V} @ 2.4 \text{ GHz}$ | dBm | — | 53 | — |
| | $V_C = 0.0 \text{ V} / 5 \text{ V} @ 5.8 \text{ GHz}$ | dBm | — | 51 | — |
| Input P-1dB | $V_C = 0.0 \text{ V} / 3 \text{ V} @ 2.4 \text{ GHz}$ | dBm | — | 32 | — |
| | $V_C = 0.0 \text{ V} / 3 \text{ V} @ 5.8 \text{ GHz}$ | dBm | — | 29 | — |
| | $V_C = 0.0 \text{ V} / 5 \text{ V} @ 2.4 \text{ GHz}$ | dBm | — | 37 | — |
| | $V_C = 0.0 \text{ V} / 5 \text{ V} @ 5.8 \text{ GHz}$ | dBm | — | 35 | — |
| 2nd Harmonic | 2.4 GHz, $P_{IN} = +20 \text{ dBm}$ | dBc | — | -88 | — |
| | 5.3 GHz, $P_{IN} = +20 \text{ dBm}$ | dBc | — | -91 | — |
| | 5.8 GHz, $P_{IN} = +20 \text{ dBm}$ | dBc | — | -77 | — |
| 3rd Harmonic | 2.4 GHz, $P_{IN} = +20 \text{ dBm}$ | dBc | — | -87 | — |
| | 5.3 GHz, $P_{IN} = +20 \text{ dBm}$ | dBc | — | -81 | — |
| | 5.8 GHz, $P_{IN} = +20 \text{ dBm}$ | dBc | — | -85 | — |
| T-rise, T-fall | 10% to 90% RF and 90% to 10% RF | nS | — | 13 | — |
| Ton, Toff | 50% control to 90% RF, 50% control to 10% RF | nS | — | 35 | — |
| Transients | — | mV | — | 14 | — |
| Control Current | $ V_C = 3 \text{ V}$ | μA | — | 10 | 25 |

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

4. Insertion loss can be optimized by varying the DC blocking capacitor value.

Truth Table⁵

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

5. 1 = +2.9 V to +5 V, 0 = 0 V \pm 0.2 V.

Absolute Maximum Ratings^{6,7}

| Parameter | Absolute Maximum |
|---------------------------|------------------|
| Input Power @ 3 V Control | +32 dBm |
| Input Power @ 5 V Control | +34 dBm |
| Operating Voltage | +8.5 volts |
| Operating Temperature | -40°C to +85°C |
| Storage Temperature | -65°C to +150°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.

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

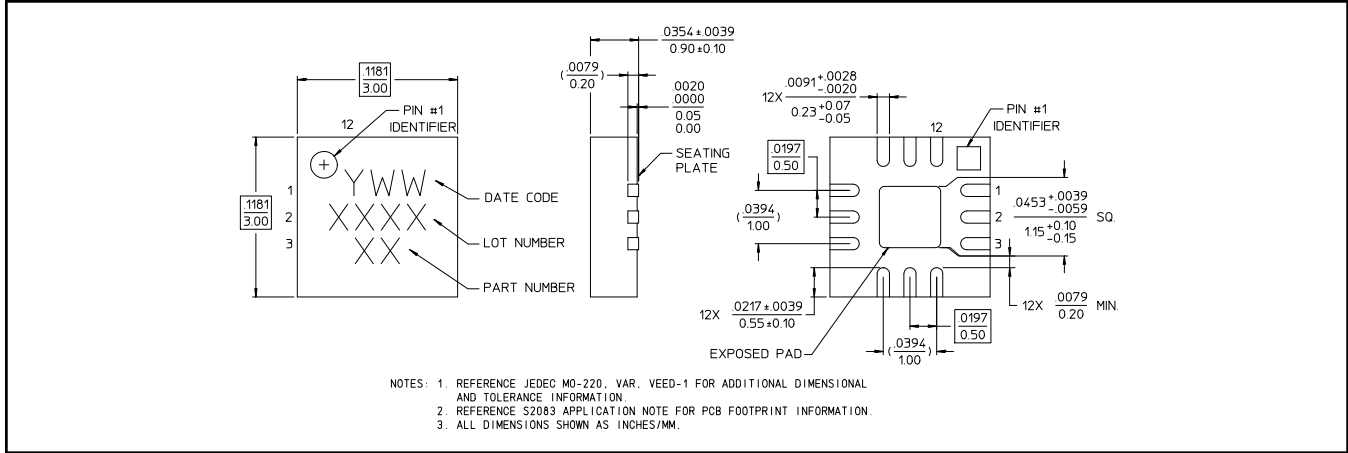
• **Europe** Tel: 44.1908.574.200 / Fax: 44.1908.574.300

• **Asia/Pacific** Tel: 81.44.844.8296 / Fax: 81.44.844.8298

Visit www.macomtech.com for additional data sheets and product information.

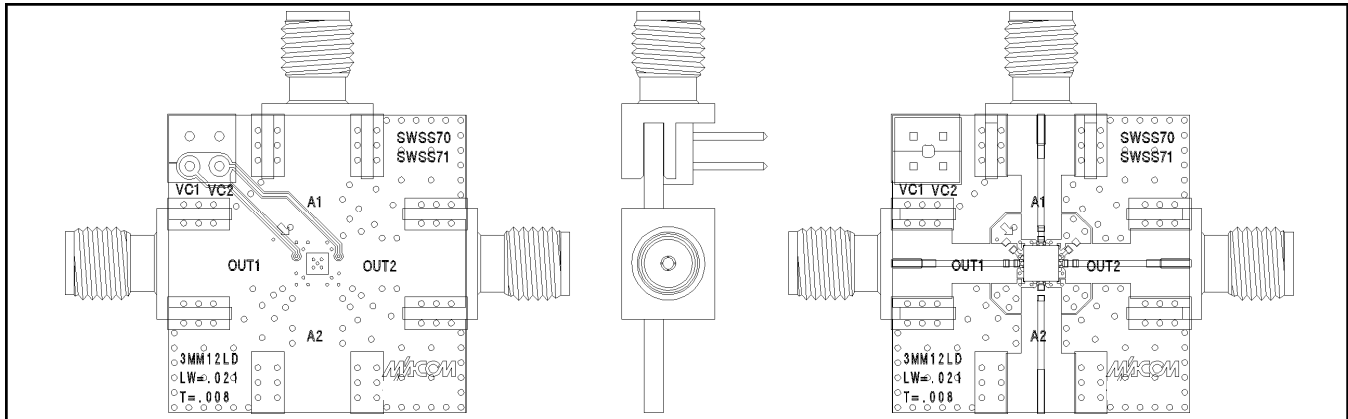
M/A-COM Technology Solutions Inc. and its affiliates reserve the right to make changes to the product(s) or information contained herein without notice.

Lead-Free 3 mm 12-Lead PQFN†

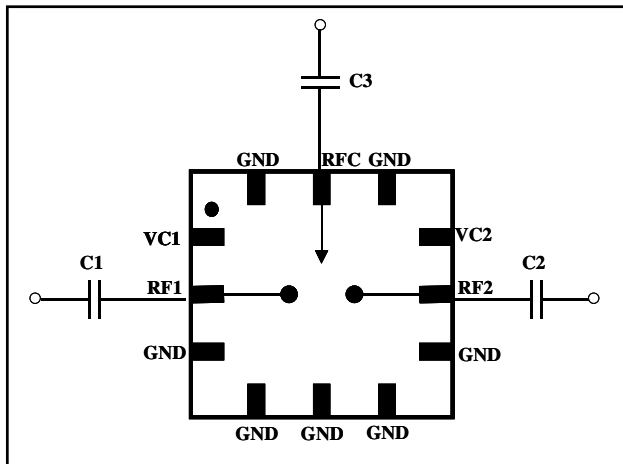


† Reference Application Note M538 for lead-free solder reflow recommendations.

Evaluation Board



Application Schematic



Application #1: Optimized for 802.11a (5-6 GHz)

| Qty. | Description |
|------|--|
| 3 | Capacitor, 3.0 pF, 0402, SMT, 5% (C1-C3) |

Application #2: Optimized for 802.11b/g (2.4 GHz)

| Qty. | Description |
|------|--|
| 3 | Capacitor, 8.0 pF, 0402, SMT, 5% (C1-C3) |

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.

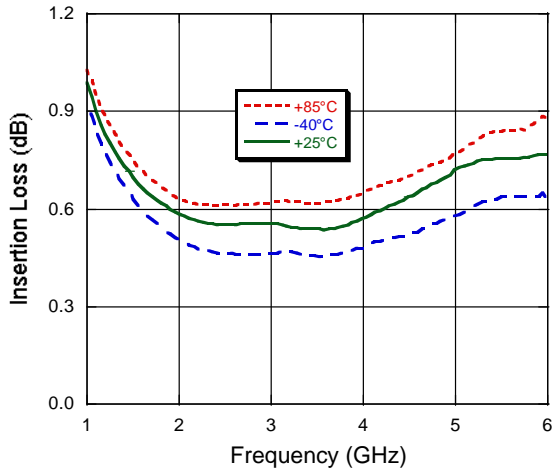
- **North America** Tel: 800.366.2266 / Fax: 978.366.2266
- **Europe** Tel: 44.1908.574.200 / Fax: 44.1908.574.300
- **Asia/Pacific** Tel: 81.44.844.8296 / Fax: 81.44.844.8298

Visit www.macomtech.com for additional data sheets and product information.

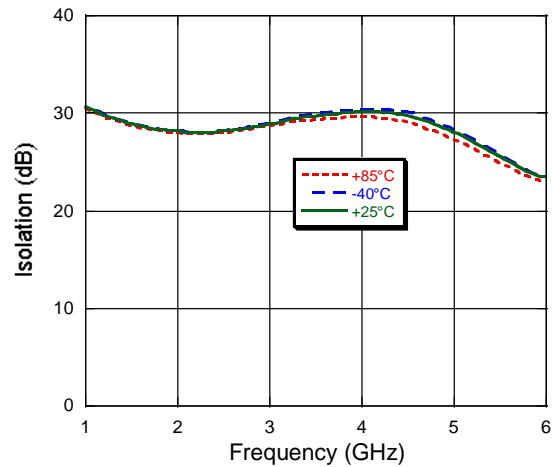
M/A-COM Technology Solutions Inc. and its affiliates reserve the right to make changes to the product(s) or information contained herein without notice.

Typical Performance Curves with 0 / 3 V Control, 8 pF Capacitors

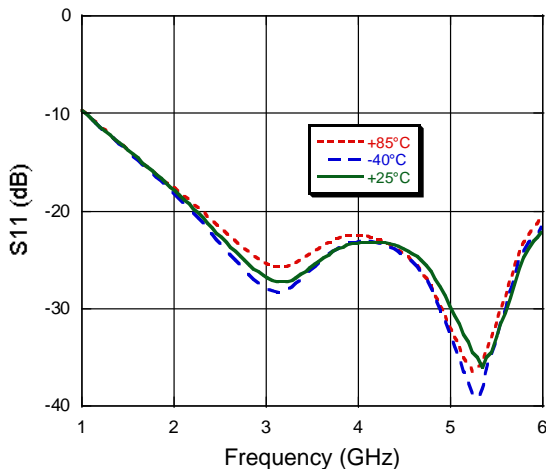
Insertion Loss



Isolation



Return Loss



Qualification

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

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.

Компания «Life Electronics» занимается поставками электронных компонентов импортного и отечественного производства от производителей и со складов крупных дистрибьюторов Европы, Америки и Азии.

С конца 2013 года компания активно расширяет линейку поставок компонентов по направлению коаксиальный кабель, кварцевые генераторы и конденсаторы (керамические, пленочные, электролитические), за счёт заключения дистрибьюторских договоров

Мы предлагаем:

- Конкурентоспособные цены и скидки постоянным клиентам.
- Специальные условия для постоянных клиентов.
- Подбор аналогов.
- Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.
- Приемлемые сроки поставки, возможна ускоренная поставка.
- Доставку товара в любую точку России и стран СНГ.
- Комплексную поставку.
- Работу по проектам и поставку образцов.
- Формирование склада под заказчика.
- Сертификаты соответствия на поставляемую продукцию (по желанию клиента).
- Тестирование поставляемой продукции.
- Поставку компонентов, требующих военную и космическую приемку.
- Входной контроль качества.
- Наличие сертификата ISO.

В составе нашей компании организован Конструкторский отдел, призванный помогать разработчикам, и инженерам.

Конструкторский отдел помогает осуществить:

- Регистрацию проекта у производителя компонентов.
- Техническую поддержку проекта.
- Защиту от снятия компонента с производства.
- Оценку стоимости проекта по компонентам.
- Изготовление тестовой платы монтаж и пусконаладочные работы.



Тел: +7 (812) 336 43 04 (многоканальный)

Email: org@lifeelectronics.ru