

## SPDT High Isolation Terminated Switch 0.5 - 3.0 GHz

Rev. V3

### Features

- Positive Voltage Control (0 / +5 V)
- High Isolation: 54 dB @ 0.9 GHz  
52 dB @ 1.9 GHz
- 50-Ohm Internal Terminations
- Low Insertion Loss: 0.6 dB @ 0.9 GHz  
0.7 dB @ 1.9 GHz
- Lead-Free Package: 4 mm 16-Lead PQFN
- 100% Matte Tin Plating over Copper
- Halogen-Free "Green" Mold Compound
- 260°C Reflow Compatible
- RoHS\* Compliant Version of SW-475

### Description

The M/A-COM MASWSS0121 GaAs monolithic switch provides high isolation in a low-cost, lead-free plastic surface mount package. The MASWSS0121 is ideal for applications across a broad range of frequencies including synthesizer switching, transmit / receive switching, switch matrices and filter banks in systems such as radio and cellular equipment, PCS, GPS, and fiber optic modules.

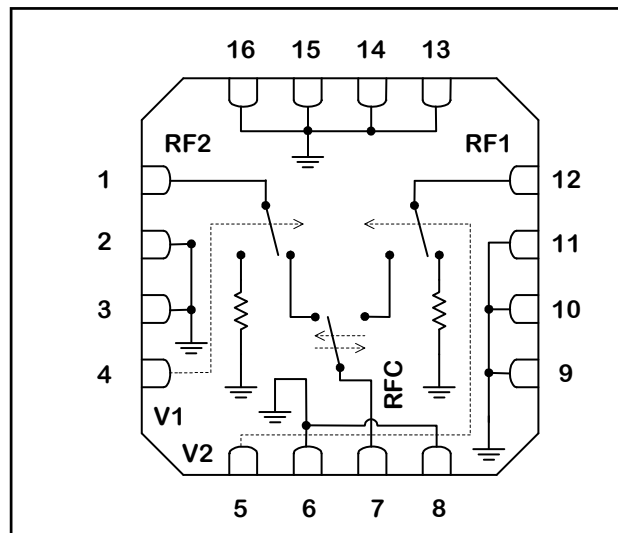
M/A-COM fabricates the MASWSS0121 using a 1.0-micron gate length MESFET process. The process features full chip passivation for performance and reliability.

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

Part Number	Package
MASWSS0121	Bulk Packaging
MASWSS0121TR	1000 piece reel
MASWSS0121TR-3000	3000 piece reel
MASWSS0121SMB	Sample board

1. Reference Application Note M513 for reel size information.

### Functional Schematic



### PIN Configuration

Pin	Function	Description
1	RF2	RF port
2	GND	RF ground
3	GND	RF ground
4	V1	Control 1
5	V2	Control 2
6	GND	RF ground
7	RFC	RF port
8	GND	RF ground
9	GND	RF ground
10	GND	RF ground
11	GND	RF ground
12	RF1	RF port
13	GND	RF ground
14	GND	RF ground
15	GND	RF ground
16	GND	RF ground
17 (pad) <sup>2</sup>	GND	RF 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.

## SPDT High Isolation Terminated Switch 0.5 - 3.0 GHz

Rev. V3

**Electrical Specifications:  $T_A = 25\text{ }^\circ\text{C}$ ,  $Z_0 = 50\text{ Ohms}$ ,  $V_C = 0, 5.0\text{ V}^3$**

Parameter	Test Conditions	Units	Min.	Typ.	Max.
Insertion Loss	0.5 - 1 GHz	dB	—	0.6	0.7
	1.0 - 2.0 GHz	dB	—	0.7	0.8
	2.0 - 3.0 GHz	dB	—	0.75	0.9
Isolation	0.5 - 1 GHz	dB	51	54	—
	1.0 - 2.0 GHz	dB	48	52	—
	2.0 - 3.0 GHz	dB	45	50	—
Return Loss	0.5 - 1 GHz	dB	—	20	—
	1.0 - 2.0 GHz	dB	—	20	—
	2.0 - 3.0 GHz	dB	—	20	—
Input IP <sub>2</sub>	2-Tone 900 MHz, 5 MHz spacing	dBm	—	83	—
Input IP <sub>3</sub>	2-Tone 900 MHz, 5 MHz spacing	dBm	—	46	—
P1dB	1 GHz, 5 V	dBm	—	27	—
	1 GHz, 3 V	dBm	—	18	—
P0.1dB	1 GHz, 5 V	dBm	—	24	—
	1 GHz, 3 V	dBm	—	11	—
T <sub>RISE</sub> , T <sub>FALL</sub>	10% to 90% RF & 90% to 10% RF	nS	—	24	—
T <sub>ON</sub> , T <sub>OFF</sub>	50% of V <sub>C</sub> to 10% / 90% RF	nS	—	15	—
Transients	V <sub>C</sub> = 5.0 V square wave, in-band	mV	—	12	—
Control Current	V <sub>C</sub>   = 4.5 V, 0 dBm	μA	—	2	13

3. External DC blocking capacitors are required on all RF ports (47 pF capacitors are recommended).

### Absolute Maximum Ratings<sup>4,5</sup>

Parameter	Absolute Maximum
Input Power (0.5 - 3.0 GHz) 3 V Control 5 V Control	+30 dBm +33 dBm
Operating Voltage	+8.5 volts
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C

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

### Truth Table

V1	V2	RFC - RF1	RFC - RF2
0	1	ON	OFF
1	0	OFF	ON

Logic Level	Voltage Level
0	0 V ± 0.2 V
1	3.0 V to 8.0 V

### Handling Procedures

Please observe the following precautions to avoid damage:

### Static Sensitivity

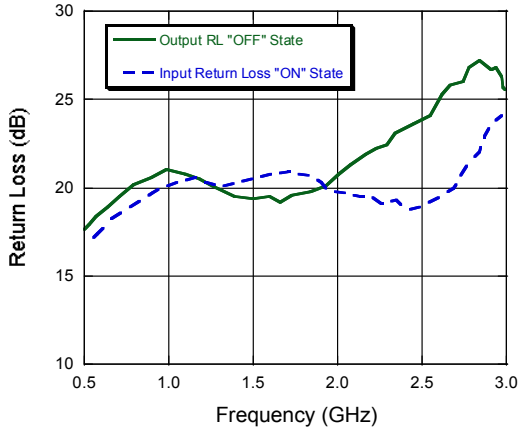
Gallium Arsenide Integrated Circuits are sensitive to electrostatic discharge (ESD) and can be damaged by static electricity. Proper ESD control techniques should be used when handling these devices.

## SPDT High Isolation Terminated Switch 0.5 - 3.0 GHz

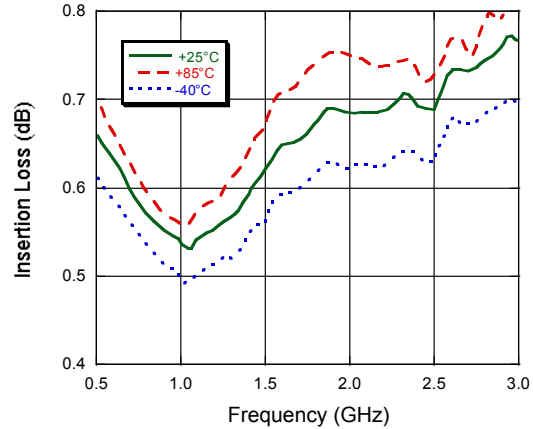
Rev. V3

### Typical Performance Curves

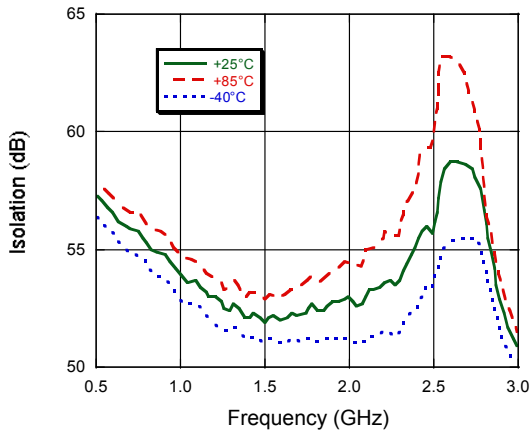
#### Return Loss



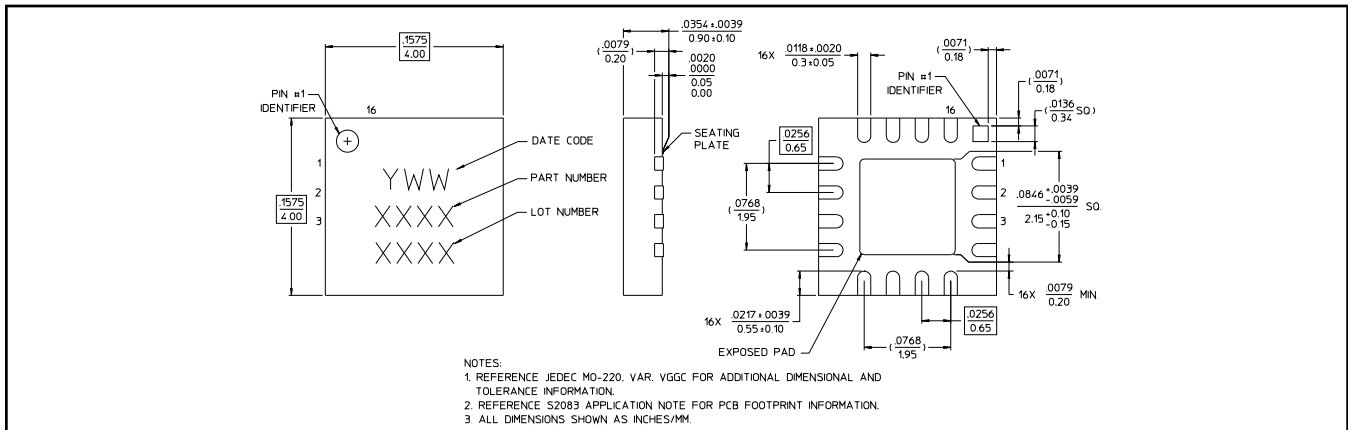
#### Insertion Loss Over Temperature



#### Isolation Over Temperature



### Lead-Free 4 mm 16-Lead PQFN†



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

3

**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.

## Данный компонент на территории Российской Федерации

### Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

### Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: [info@moschip.ru](mailto:info@moschip.ru)

Skype отдела продаж:

moschip.ru

moschip.ru\_4

moschip.ru\_6

moschip.ru\_9