

## GaAs SP4T Absorptive Switch with ASIC Driver, DC-3.0 GHz

MASW-007073-000100

V1

### Features

- Typical Isolation: 33 dB (2,000 MHz)
- Typical Insertion Loss: 1.6 dB (2,000 MHz)
- Integral ASIC TTL/CMOS Driver
- Low DC Power Consumption
- 50 Ohm Nominal Impedance
- Tape and Reel Packaging Available
- Test Boards Available
- Lead-Free SOW-24 Package
- 100% Matte Tin Plating over Copper
- Halogen-Free "Green" Mold Compound
- 260°C Reflow Compatible
- RoHS\* Compliant Version of SW65-0314

### Description

M/A-COM's MASW-007073-000100 is a GaAs MMIC absorptive SP4T switch with an integral silicon ASIC driver. This device is in a 24-lead plastic package. This switch offers excellent broadband performance and repeatability from DC to 3 GHz, while maintaining low DC power dissipation. The MASW-007073-000100 is ideally suited for wireless infrastructure applications. Also available in a ceramic package with improved performance.

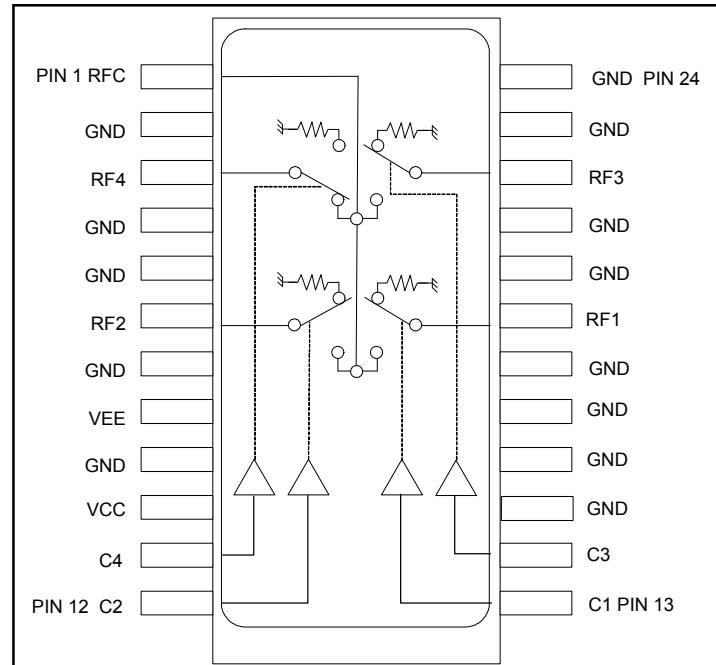
### Ordering Information

Part Number	Package
MASW-007073-000100	Bulk Packaging
MASW-007073-0001TR	1000 piece reel
MASW-007073-0001TB	Sample Test Board

Note: Reference Application Note M513 for reel size information.

Note: Die quantity varies.

### Functional Block Diagram



### Pin Configuration

Pin No.	Function	Pin No.	Function
1	RFC	13	C1
2	GND	14	C3
3	RF4	15	GND
4	GND	16	GND
5	GND	17	GND
6	RF2	18	GND
7	GND	19	RF1
8	V <sub>EE</sub>	20	GND
9	GND	21	GND
10	V <sub>CC</sub>	22	RF3
11	C4	23	GND
12	C2	24	GND

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

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Electrical Specifications:  $T_A = 25^\circ\text{C}$ ,  $Z_0 = 50\Omega$ 

Parameter	Test Conditions	Units	Min	Typ	Max
Insertion Loss	DC - 1.0 GHz DC - 2.0 GHz DC - 3.0 GHz	dB	—	1.5 1.6 2.0	1.7 1.8 2.3
Isolation (One Arm On)	DC - 1.0 GHz DC - 2.0 GHz DC - 3.0 GHz	dB	35 27 25	38 33 27	— — —
VSWR	DC - 1.0 GHz DC - 2.0 GHz DC - 3.0 GHz	—	—	On 1.3:1 1.5:1 1.7:1	Off 1.3:1 1.7:1 2.2:1
$T_{rise}$ $T_{fall}$ $T_{on}$ $T_{off}$ Transients	10%/90%, 90%/10% <sup>1</sup> 50% TTL to 90%/10% RF In-band (peak to peak)	ns ns mV	— — —	15 50 50	50 150 150
1 dB Compression	.05 GHz .5 - 3.0 GHz	dBm dBm	— —	+20 +27	— —
Input IP3	Two tone inputs 0.05 GHz Up to +5 dBm 0.5 - 3.0 GHz	dBm dBm	— —	+35 +46	— —
V <sub>CC</sub>	—	V	+4.5	+5.0	+5.5
V <sub>EE</sub>	—	V	-8.0	-5.0	-4.75
I <sub>CC</sub>	V <sub>CC</sub> = +5.0V	mA	—	0.2	6
I <sub>EE</sub>	V <sub>EE</sub> = -5.0V	mA	—	-0.2	-1
Logic "0"	I <sub>in</sub> = 20 $\mu\text{A}$ max	V	0.0	—	0.8
Logic "1"	I <sub>in</sub> = 20 $\mu\text{A}$ max	V	2.0	—	5.0

1. Decoupling capacitors (.01  $\mu\text{F}$ ) are required on the power supply lines.Absolute Maximum Ratings<sup>2,3</sup>

Parameter	Absolute Maximum
Max. Input Power 0.05 GHz 0.5 - 3.0 GHz <sup>4</sup>	+27 dBm +34 dBm
Bias Voltages V <sub>EE</sub> V <sub>CC</sub> Control Voltage <sup>5</sup>	-8.5V $\leq$ V <sub>EE</sub> $\leq$ 0.5V -0.5V $\leq$ V <sub>CC</sub> $\leq$ +5.5V -0.5V to V <sub>CC</sub> +0.5V
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +125°C

- Exceeding any one or combination of these limits may cause permanent damage to this device.
- M/A-COM does not recommend sustained operation near these survivability limits.
- When the RF input is applied to the terminated port, the absolute maximum power is +30 dBm.
- Standard CMOS TTL interface, latch-up will occur if logic signal is applied prior to power supply.

## 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.

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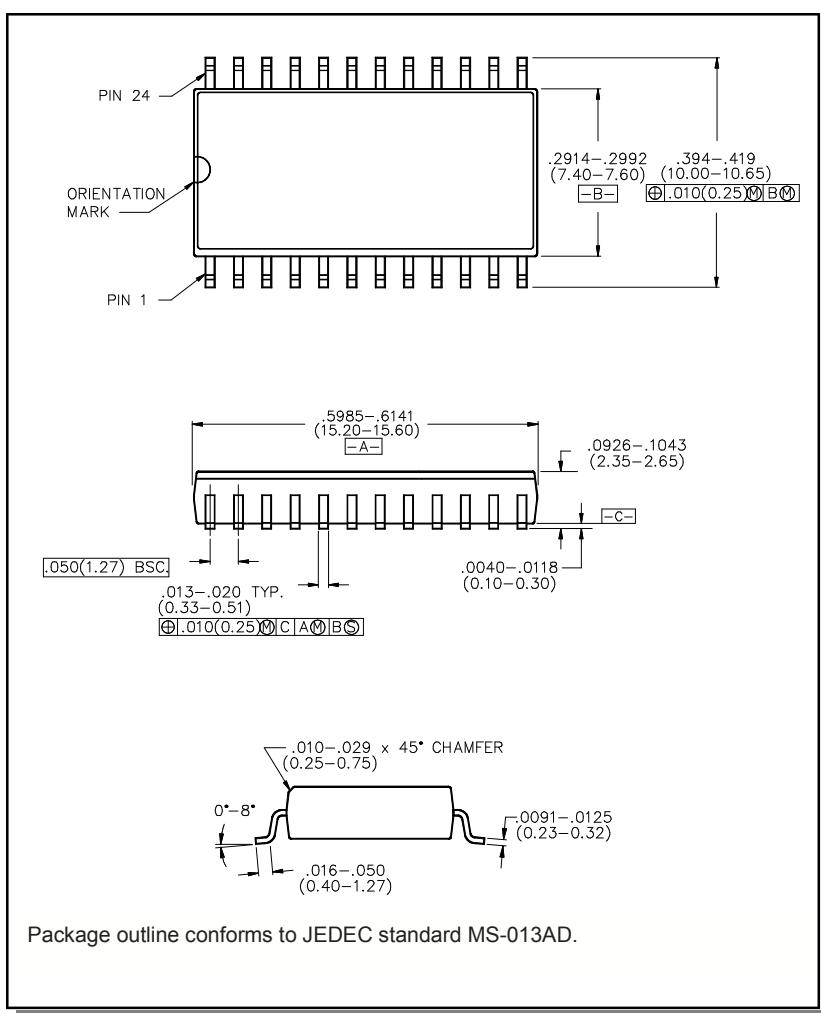
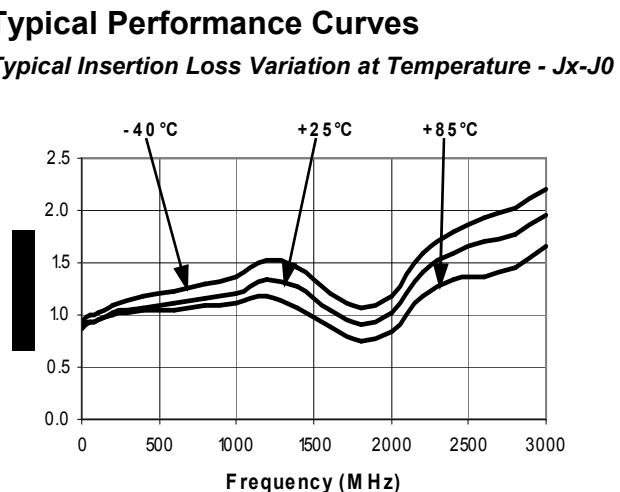
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## Truth Table

TTL Control Input				RF Common To:			
C1	C2	C3	C4	RF1	RF2	RF3	RF4
1	0	0	0	On	Off	Off	Off
0	1	0	0	Off	On	Off	Off
0	0	1	0	Off	Off	On	Off
0	0	0	1	Off	Off	Off	On

## Lead-Free, SOW-24<sup>†</sup>



Package outline conforms to JEDEC standard MS-013AD.

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

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