

GaAs SPDT Absorptive Switch with ASIC Driver, DC-3.0 GHz

MASW-007075-000100

V1

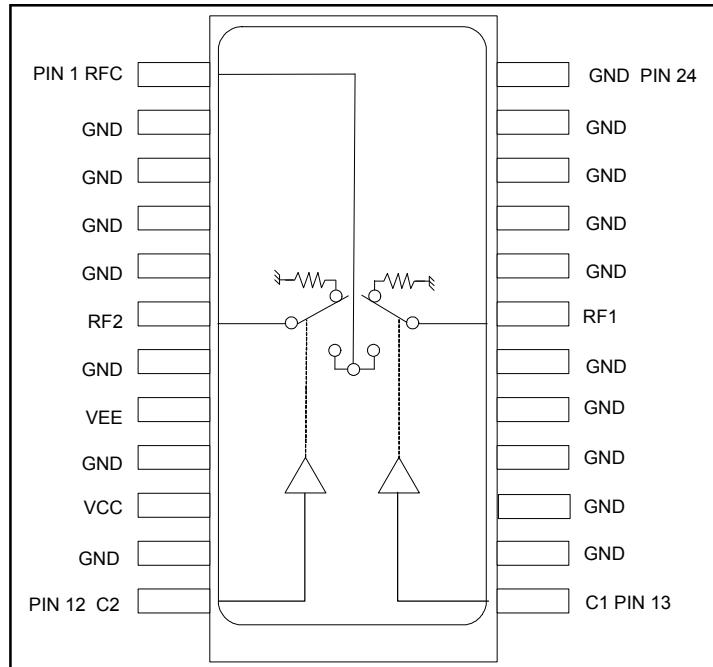
Features

- Typical Isolation: 36 dB (2,000 MHz)
 - Typical Insertion Loss: 1.8 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 SW65-0114

Description

M/A-COM's MASW-007075-000100 is a GaAs MMIC absorptive SPDT 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-007075-000100 is ideally suited for wireless infrastructure applications. Also available in ceramic package with improved performance.

Functional Block Diagram



Pin Configuration

Pin No.	Function	Pin No.	Function
1	RFC	13	C1
2	GND	14	GND
3	GND	15	GND
4	GND	16	GND
5	GND	17	GND
6	RF2	18	GND
7	GND	19	RF1
8	V _{EE}	20	GND
9	GND	21	GND
10	V _{CC}	22	GND
11	GND	23	GND
12	C2	24	GND

Note: Reference Application Note M513 for reel size information.

Note: Die quantity varies

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

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

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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 - 3.0 GHz	dB	—	1.8	2.2
Isolation (All arms off)	DC - 3.0 GHz	dB	33	36	—
VSWR	DC - 3.0 GHz On Off	—	—	1.7:1 2.1:1	2.2:1 2.2:1
T_{rise} T_{fall} T_{on} T_{off} Transients	10%/90%, 90%/10% ¹ 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 IP ₃	Two tone inputs up to +5 dBm	dBm dBm	— —	+35 +46	—
V_{CC}	—	V	+4.5	+5.0	+5.5
V_{EE}	—	V	-8.0	-5.0	-4.75
I_{CC}	$V_{CC} = +5.0\text{V}$	mA	—	—	4
I_{EE}	$V_{EE} = -5.0\text{V}$	mA	—	—	-1
Logic "0"	$I_{in} = 20\mu\text{A}$ max	V	0.0	—	0.8
Logic "1"	$I_{in} = 20\mu\text{A}$ max	V	2.0	—	5.0

1. Decoupling capacitors (.01 μF) are required on the power supply lines.

Absolute Maximum Ratings^{2,3}

Parameter	Absolute Maximum
Max. Input Power 0.05 GHz 0.5 - 3.0 GHz ⁴	+27 dBm +34 dBm
Bias Voltages V_{EE} V_{CC} Control Voltage ⁵	$-8.5\text{V} \leq V_{EE} \leq 0.5\text{V}$ $-0.5\text{V} \leq V_{CC} \leq +5.5\text{V}$ -0.5V to $V_{CC} + 0.5\text{V}$
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.

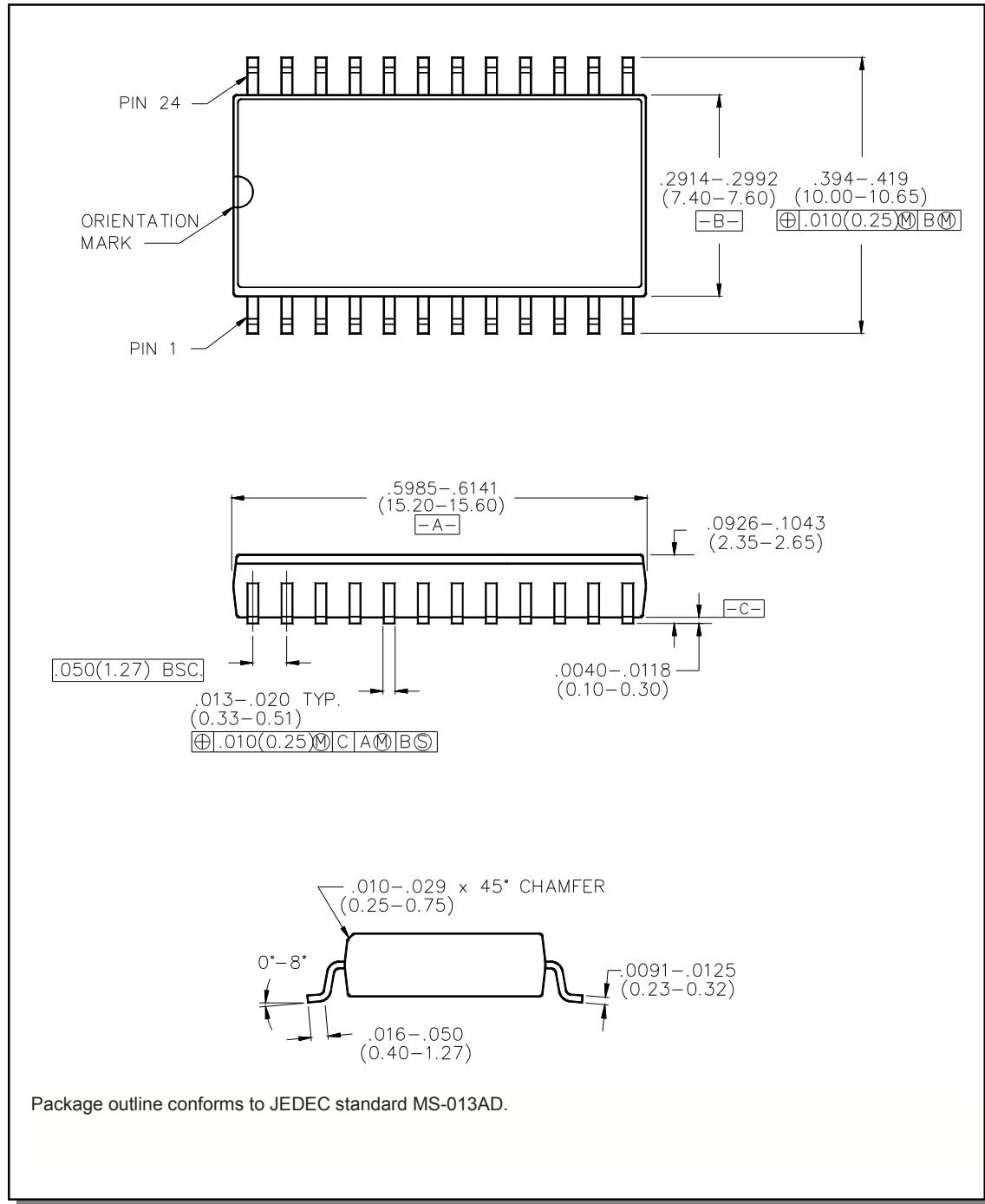
Truth Table

TTL Control Input		RF Common To:	
C1	C2	RF1	RF2
1	0	On	Off
0	1	Off	On

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Lead-Free, SOW-24[†]

Package outline conforms to JEDEC standard MS-013AD.

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