

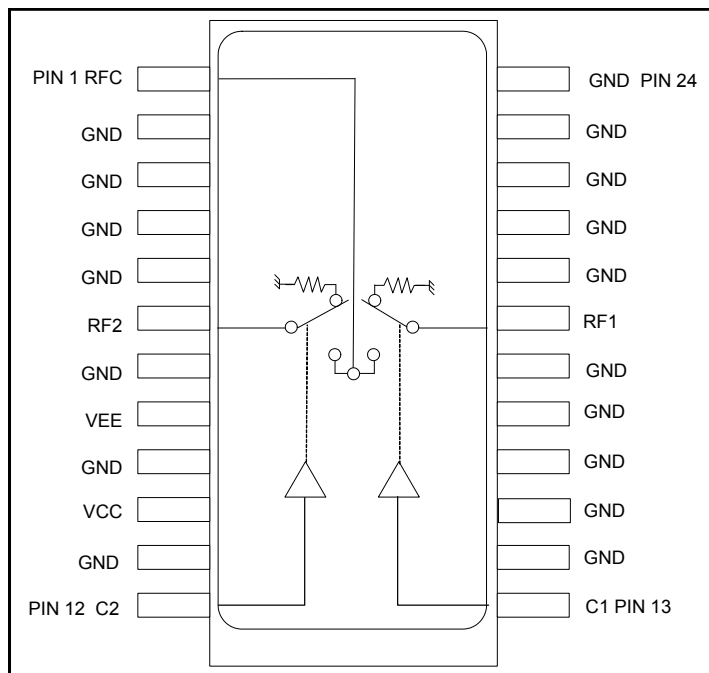
### Features

- 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



### Ordering Information

Part Number	Package
MASW-007075-000100	Bulk Packaging
MASW-007075-0001TR	1000 piece reel
MASW-007075-0001TB	Sample Test Board

Note: Reference Application Note M513 for reel size information.

### 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 <sub>EE</sub>	20	GND
9	GND	21	GND
10	V <sub>CC</sub>	22	GND
11	GND	23	GND
12	C2	24	GND

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

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

Rev. V4

### 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	—	—	1.7:1	2.2:1
	Off	—	—	2.1:1	2.2:1
$T_{\text{rise}}$ $T_{\text{fall}}$ $T_{\text{on}}$ $T_{\text{off}}$ Transients	10%/90%, 90%/10% <sup>1</sup>	ns	—	15	50
	50% TTL to 90%/10% RF	ns	—	50	150
	In-band (peak to peak)	mV	—	50	150
1 dB Compression	.05 GHz	dBm	—	+20	—
	.5 - 3.0 GHz	dBm	—	+27	—
Input $IP_3$	Two tone inputs 0.05 GHz	dBm	—	+35	—
	up to +5 dBm 0.5 - 3.0 GHz	dBm	—	+46	—
$V_{CC}$	—	V	+4.5	+5.0	+5.5
$V_{EE}$	—	V	-8.0	-5.0	-4.75
$V_{IL}$ $V_{IH}$	LOW-level input voltage	V	0.0	—	0.8
	HIGH-level input voltage	V	2.0	—	5.0
lin (Input Leakage Current)	$V_{in} = V_{CC}$ or GND	$\mu\text{A}$	-1.0	—	1.0
$I_{CC}$ (Quiescent Supply Current)	$V_{ctrl} = V_{CC}$ or GND	$\mu\text{A}$	—	250	400
$\Delta I_{CC}$ (Additional Supply Current Per TTL Input Pin)	$V_{CC} = \text{Max}$ , $V_{ctrl} = V_{CC} - 2.1\text{ V}$	mA	—	—	1.0
IEE	$V_{EE}$ min to max, $V_{in} = V_{IL}$ or $V_{IH}$	mA	-1.0	-0.2	—

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
$V_{CC}$	$-0.5\text{ V} \leq V_{CC} \leq +7.0\text{ V}$
$V_{EE}$	$-8.5\text{ V} \leq V_{EE} \leq +0.5\text{ V}$
$V_{CC} - V_{EE}$	$-0.5\text{ V} \leq V_{CC} - V_{EE} \leq 14.5\text{ V}$
$V_{in}$ <sup>5</sup>	$-0.5\text{ V} \leq V_{in} \leq V_{CC} + 0.5\text{ V}$
Operating Temperature	$-40^\circ\text{C}$ to $+85^\circ\text{C}$
Storage Temperature	$-65^\circ\text{C}$ to $+125^\circ\text{C}$

- 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

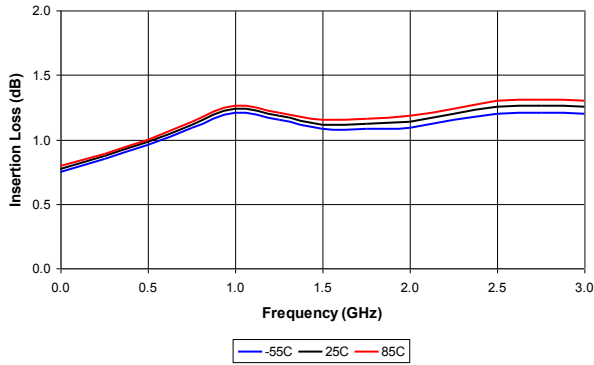
Gallium Arsenide Integrated Circuits are sensitive to electrostatic discharge (ESD) and can be damaged by static electricity. Proper ESD control techniques should be used when handling these devices.

### Truth Table

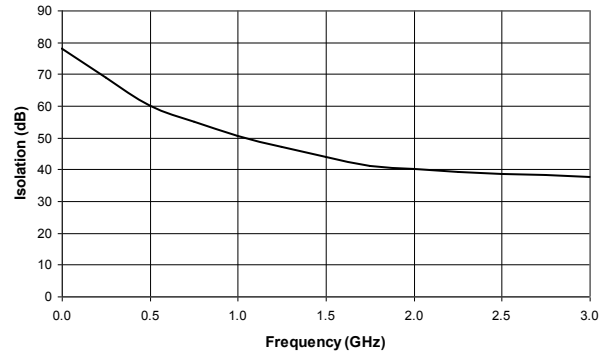
TTL Control Input		RF Common To:	
C1	C2	RF1	RF2
1	0	On	Off
0	1	Off	On

### Typical Performance Curves

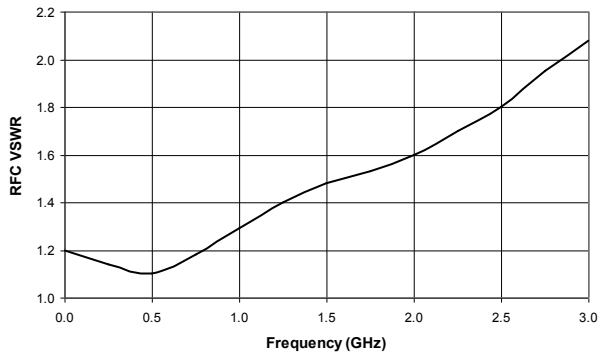
**Insertion Loss vs. Frequency**



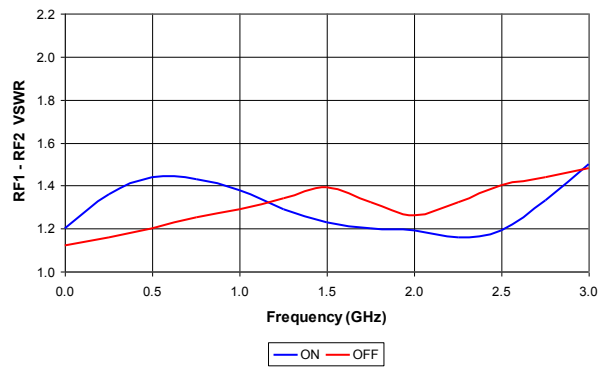
**Isolation Loss vs. Frequency**



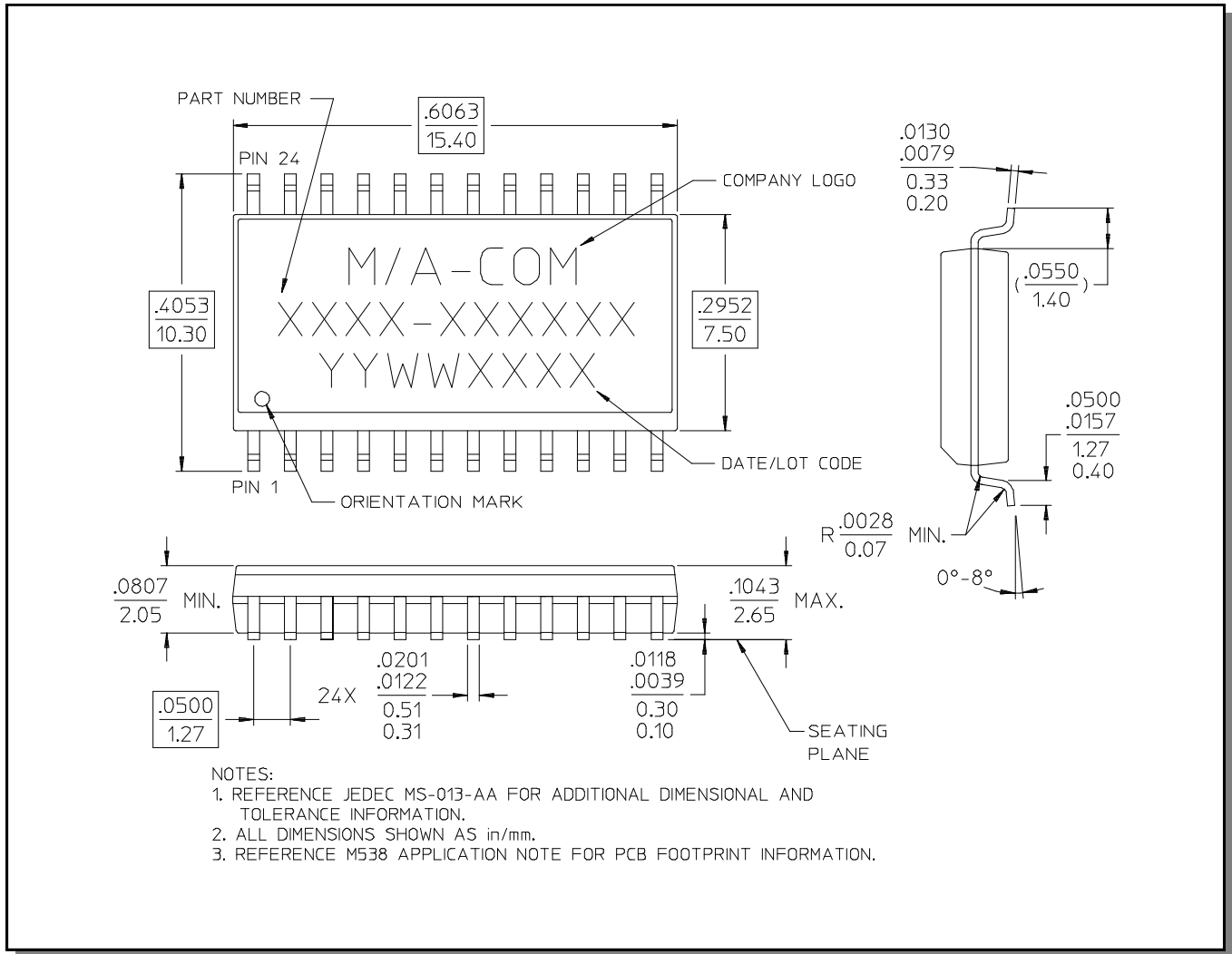
**RF1 VSWR vs. Frequency**



**RF1-RF2 VSWR vs. Frequency**



### Lead-Free, SOW-24<sup>†</sup>



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

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