

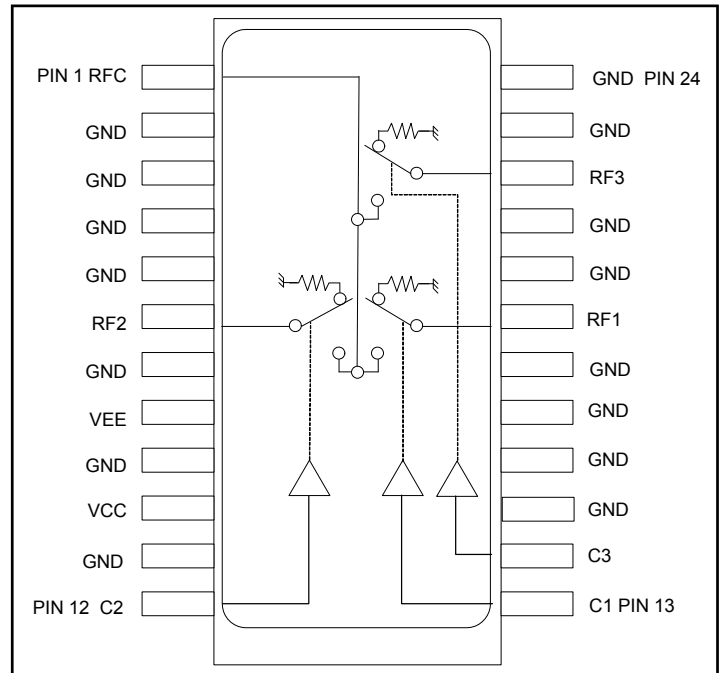
## Features

- Typical Isolation: 32 dB (2,000 MHz)
- Typical Insertion Loss: 2.0 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
- SOW-24 Package

## Description

M/A-COM's SW65-0214 is a GaAs MMIC absorptive SP3T 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 SW65-0214 is ideally suited for wireless infrastructure applications. Also available in ceramic package with improved performance.

## Functional Block Diagram



## Ordering Information

Part Number	Package
SW65-0214	Bulk Packaging
SW65-0214TR	1000 piece reel
SW65-0214-TB	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	C3
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	RF3
11	GND	23	GND
12	C2	24	GND

### 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	—	2.0	2.3
Isolation (All arms off)	DC - 3.0 GHz	dB	30	32	—
VSWR	DC - 3.0 GHz On	—	—	1.7:1	2.4:1
	Off	—	—	2.2:1	2.4:1
$T_{\text{rise}}$ $T_{\text{fall}}$ $T_{\text{on}}$ $T_{\text{off}}$ 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 <sub>3</sub>	Two tone inputs 0.05 GHz	dBm	—	+35	—
	up to +5 dBm 0.5 - 3.0 GHz	dBm	—	+46	—
$V_{\text{CC}}$	—	V	+4.5	+5.0	+5.5
$V_{\text{EE}}$	—	V	-8.0	-5.0	-4.75
$V_{\text{IL}}$ $V_{\text{IH}}$	LOW-level input voltage	V	0.0	—	0.8
	HIGH-level input voltage	V	2.0	—	5.0
I <sub>in</sub> (Input Leakage Current)	$V_{\text{in}} = V_{\text{CC}}$ or GND	uA	-1.0	—	1.0
I <sub>cc</sub> (Quiescent Supply Current)	$V_{\text{cntrl}} = V_{\text{CC}}$ or GND	uA	—	250	400
$\Delta I_{\text{cc}}$ (Additional Supply Current Per TTL Input Pin)	$V_{\text{CC}} = \text{Max}$ , $V_{\text{cntrl}} = V_{\text{CC}} - 2.1 \text{ V}$	mA	—	—	1.0
I <sub>EE</sub>	$V_{\text{EE}}$ min to max, $V_{\text{in}} = V_{\text{IL}}$ or $V_{\text{IH}}$	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
$V_{\text{CC}}$	$-0.5\text{V} \leq V_{\text{CC}} \leq +7.0\text{V}$
$V_{\text{EE}}$	$-8.5\text{V} \leq V_{\text{EE}} \leq +0.5\text{V}$
$V_{\text{CC}} - V_{\text{EE}}$	$-0.5\text{V} \leq V_{\text{CC}} - V_{\text{EE}} \leq 14.5\text{V}$
$V_{\text{in}}^5$	$-0.5\text{V} \leq V_{\text{in}} \leq V_{\text{CC}} + 0.5\text{V}$
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	C3	RF1	RF2	RF3
1	0	0	On	Off	Off
0	1	0	Off	On	Off
0	0	1	Off	Off	On

0 = TTL Low; 1 = TTL High

**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.

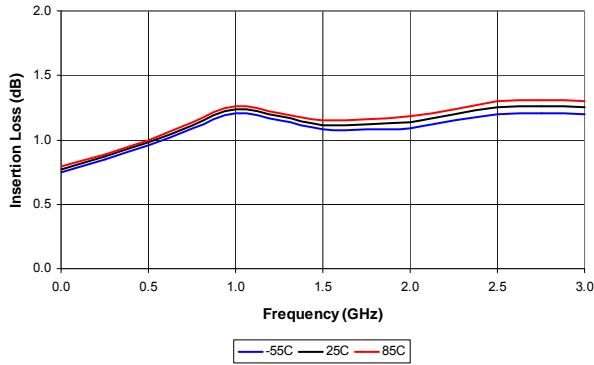
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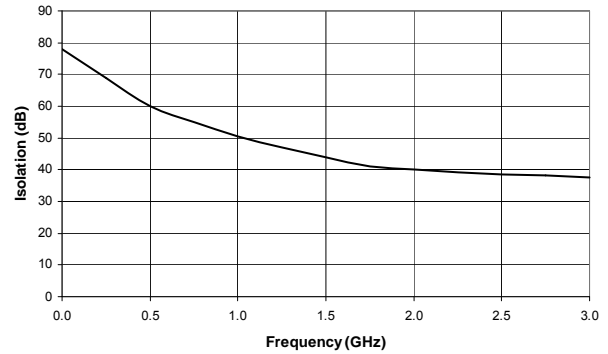
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## Typical Performance Curves

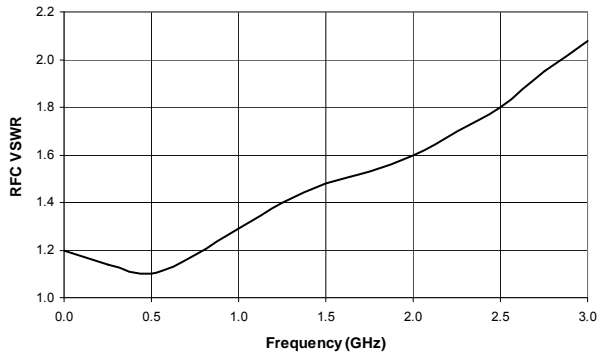
**Insertion Loss vs. Frequency**



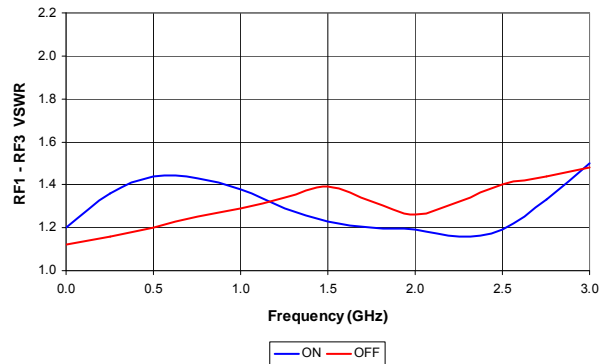
**Isolation Loss vs. Frequency**



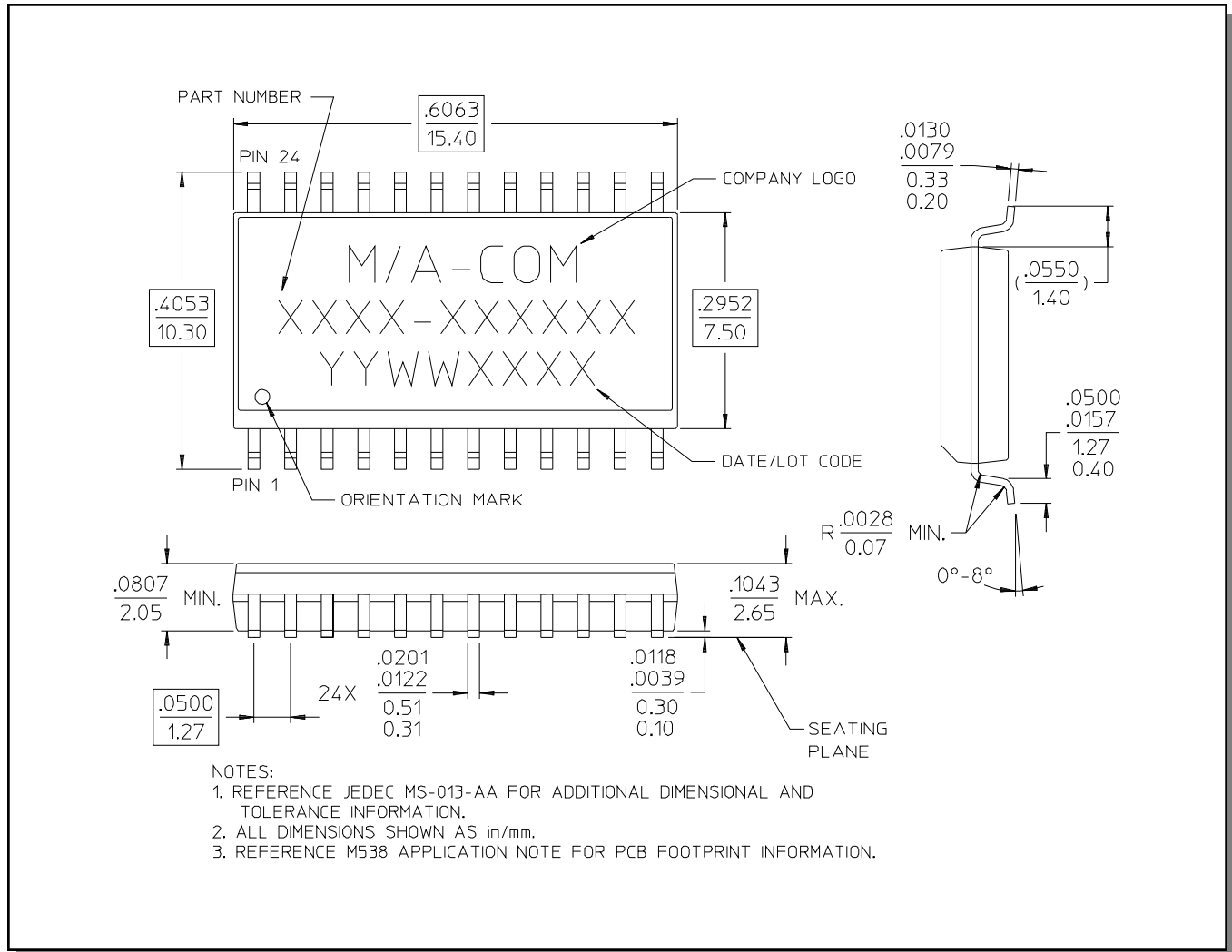
**RF3 VSWR vs. Frequency**



**RF1-RF3 VSWR vs. Frequency**



## SOW-24†



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