

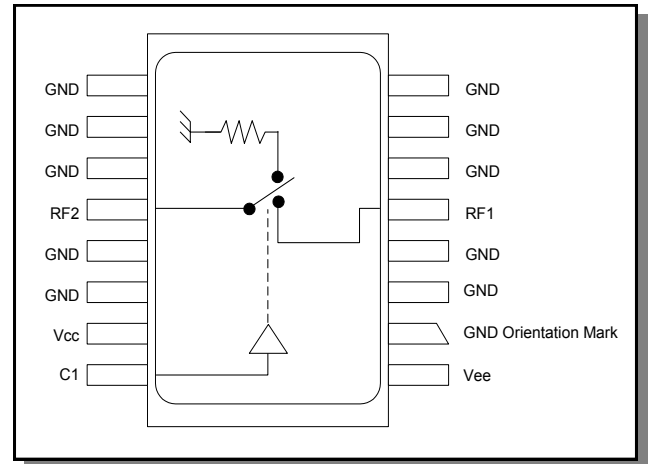
Features

- Integral TTL Driver
- Low DC Power Consumption
- Surface Mount Package
- Low Cost/High Performance
- 50 Ohm Nominal Impedance
- Lead-Free CR-9 Package
- 260°C Reflow Compatible
- RoHS* Compliant

Description

M/A-COM's SW05-0311 is a GaAs FET SPST absorptive switch with integral silicon ASIC driver. Packaged in a 16-lead ceramic surface mount package, this device offers excellent performance and repeatability from DC to 3 GHz while maintaining low power consumption. The SW05-0311 is ideally suited for use where fast speed, low power consumption and broadband applications are required.

Functional Block Diagram



Ordering Information

Part Number	Package
SW05-0311	Bulk Packaging
SW05-0311TR	1000 piece reel
MASW-008843-0001TB	Sample Test Board

Note: Reference Application Note M513 for reel size information.

Pin Configuration

Pin No.	Function	Pin No.	Function
1	Vee	9	GND
2	GND	10	GND
3	GND	11	GND
4	GND	12	RF2
5	RF1	13	GND
6	GND	14	GND
7	GND	15	Vcc
8	GND	16	C1

The metal bottom of the case must be connected to RF and DC ground.

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

Matched GaAs SPST Switch, DC-3.0 GHz with TTL/CMOS Control Input

Rev. V6

Electrical Specifications: $T_A = +25^\circ\text{C}^{1,2}$

Parameter	Test Conditions	Frequency	Units	Min	Typ	Max
Insertion Loss	—	DC - 3000 MHz	dB	—	1.0	1.3
		DC - 2000 MHz	dB	—	0.8	1.2
		DC - 1000 MHz	dB	—	0.7	1.0
		DC - 500 MHz	dB	—	0.6	0.8
VSWR	—	DC - 3000 MHz	Ratio	—	1.4:1	1.5:1
		DC - 2000 MHz	Ratio	—	1.3:1	1.4:1
		DC - 1000 MHz	Ratio	—	1.2:1	1.3:1
		DC - 500 MHz	Ratio	—	1.1:1	1.2:1
Isolation	—	DC - 3000 MHz	dB	25	29	—
		DC - 2000 MHz	dB	35	40	—
		DC - 1000 MHz	dB	35	60	—
		DC - 500 MHz	dB	65	70	—
Trise, Tfall	10% to 90%	—	ns	—	50	—
Ton, Toff	D1.3V CTL to 90% / 10%	—	ns	—	150	—
Transients	In-Band	—	mV	—	50	—
1 dB Compression	Input Power	0.05 GHz	dBm	—	+21	—
		0.5 GHz to 3 GHz	dBm	—	+27	—
IP2	Two-Tone Input Power up to +5 dBm	0.05 GHz	dBm	—	+62	—
		0.5 GHz to 3 GHz	dBm	—	+68	—
IP3	Two-Tone Input Power up to +5 dBm	0.05 GHz	dBm	—	+40	—
		0.5 GHz to 3 GHz	dBm	—	+46	—
Vin Low	0V to 0.8V	—	μA	—	—	1
Vin High	2.0V to 5.0V	—	μA	—	—	1
Vcc	+5.0V \pm 10%	—	mA	—	—	1
Vee	-5.0V to -8.0V	—	mA	—	—	1

1. All specifications apply when operated with bias voltages of +5V for Vcc and -5V for Vee.
2. When DC blocks are used, a 10K ohm return to GND is required on the RFC port.

Matched GaAs SPST Switch, DC-3.0 GHz with TTL/CMOS Control Input

Rev. V6

Absolute Maximum Ratings ^{3,4}

Parameter	Absolute Maximum
Max Input Power 50 MHz 500 - 3000 MHz	+27 dBm +34 dBm
V_{CC}	$-0.5V \leq V_{CC} \leq +7.0V$
V_{EE}	$-8.5V \leq V_{EE} \leq +0.5V$
$V_{CC} - V_{EE}$	$-0.5V \leq V_{CC} - V_{EE} \leq 14.5V$
V_{in}^5	$-0.5V \leq V_{in} \leq V_{CC} + 0.5V$
Operating Temperature	-40°C to +125°C
Storage Temperature	-65°C to +150°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.
- Standard CMOS TTL interface, latch-up will occur if logic signal is applied prior to power supply.

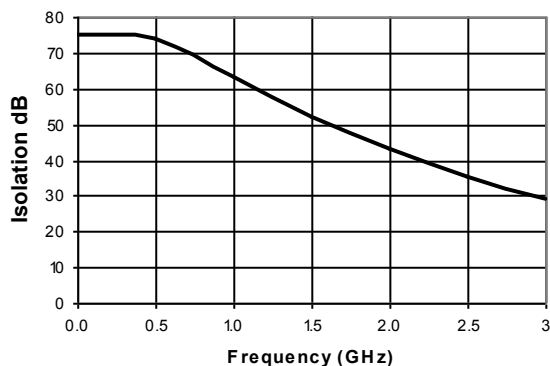
Handling Procedures

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.

Isolation vs. Frequency



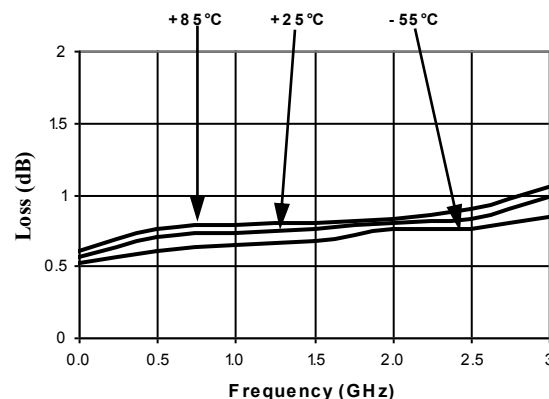
Truth Table (Switch)

Control Input	Condition of Switch
C1	RF1 to RF2
0	ON
1	OFF

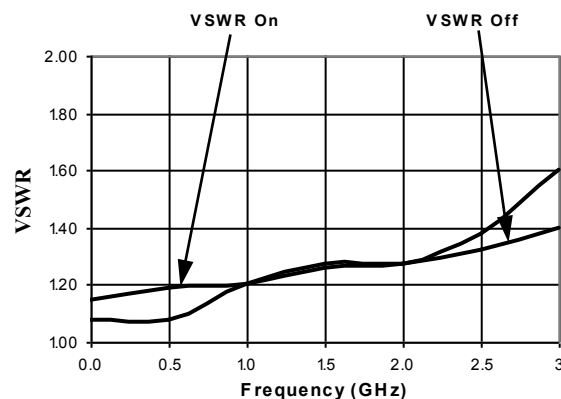
0 = TTL Low; 1 = TTL High

Typical Performance Curves

Insertion Loss vs. Frequency



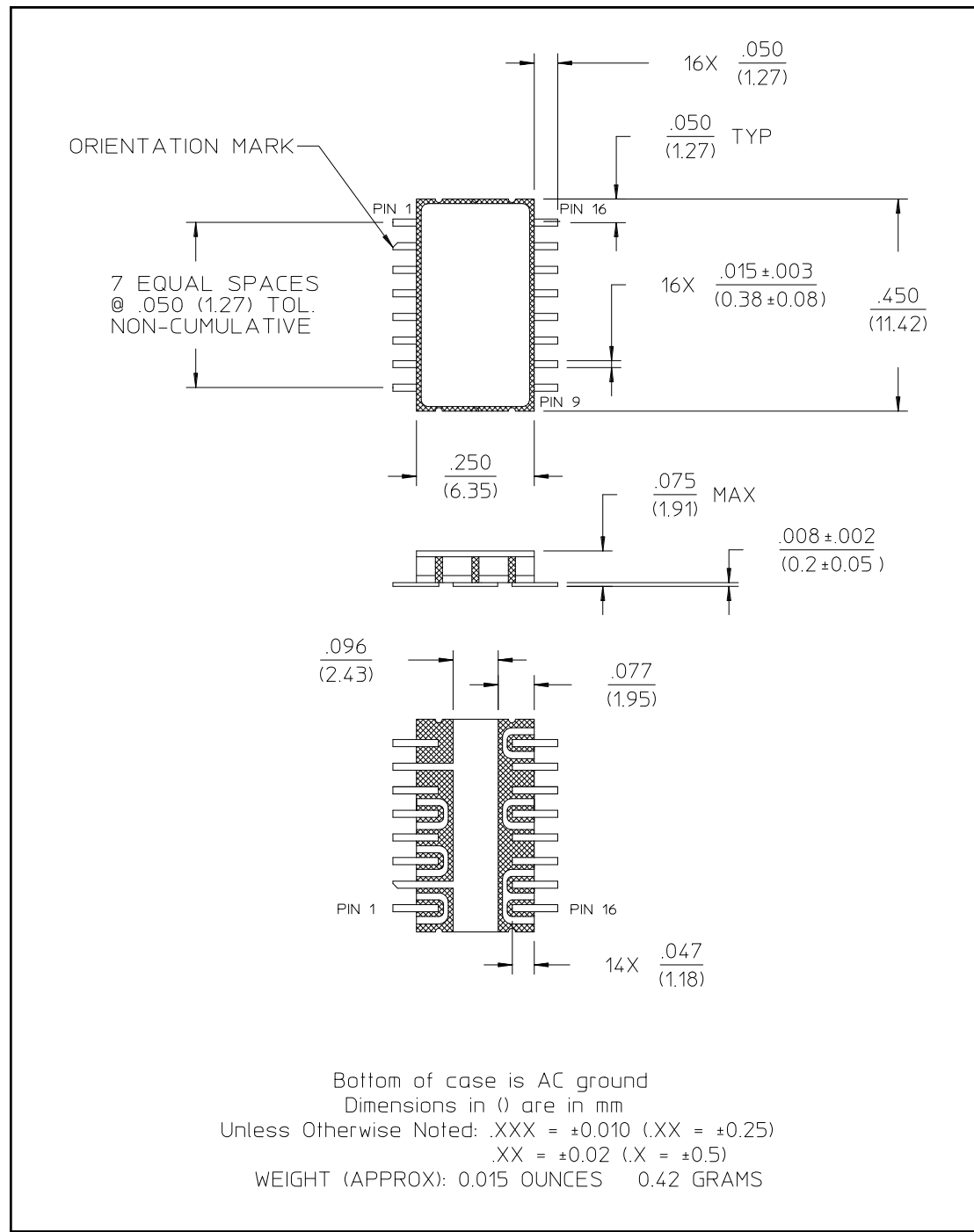
VSWR vs. Frequency



Matched GaAs SPST Switch, DC-3.0 GHz with TTL/CMOS Control Input

Rev. V6

Lead-Free, CR-9 Ceramic Package[†]



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

M/A-COM Technology Solutions Inc. All rights reserved.

Information in this document is provided in connection with M/A-COM Technology Solutions Inc ("MACOM") products. These materials are provided by MACOM as a service to its customers and may be used for informational purposes only. Except as provided in MACOM's Terms and Conditions of Sale for such products or in any separate agreement related to this document, MACOM assumes no liability whatsoever. MACOM assumes no responsibility for errors or omissions in these materials. MACOM may make changes to specifications and product descriptions at any time, without notice. MACOM makes no commitment to update the information and shall have no responsibility whatsoever for conflicts or incompatibilities arising from future changes to its specifications and product descriptions. No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document.

THESE MATERIALS ARE PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, RELATING TO SALE AND/OR USE OF MACOM PRODUCTS INCLUDING LIABILITY OR WARRANTIES RELATING TO FITNESS FOR A PARTICULAR PURPOSE, CONSEQUENTIAL OR INCIDENTAL DAMAGES, MERCHANTABILITY, OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT. MACOM FURTHER DOES NOT WARRANT THE ACCURACY OR COMPLETENESS OF THE INFORMATION, TEXT, GRAPHICS OR OTHER ITEMS CONTAINED WITHIN THESE MATERIALS. MACOM SHALL NOT BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION, LOST REVENUES OR LOST PROFITS, WHICH MAY RESULT FROM THE USE OF THESE MATERIALS.

MACOM products are not intended for use in medical, lifesaving or life sustaining applications. MACOM customers using or selling MACOM products for use in such applications do so at their own risk and agree to fully indemnify MACOM for any damages resulting from such improper use or sale.

5

M/A-COM Technology Solutions Inc. (MACOM) and its affiliates reserve the right to make changes to the product(s) or information contained herein without notice.
Visit www.macom.com for additional data sheets and product information.