

M/A-COM GaAs SP4T Absorptive Switch, DC - 3 GHz

V 5

SW-314

Features

- Integral TTL Driver
- Isolation: 50 dB Typ. At 1 GHz
- Ultra Low DC Power Consumption
- Hermetic Surface Mount Package
- 50 Ohms Nominal Impedance
- MIL-STD-883 Screening Available

Description

M/A-COM's SW-314 is a GaAs MMIC SP4T absorptive switch with an integral silicon ASIC driver. This device is in a 24-lead ceramic surface mount package. These switches exhibit excellent performance from DC to 3 GHz, with very low DC power dissipation. The SW-314 is ideally suited for RF/IF communications applications. Environmental screening is available. Contact the factory for information.

Ordering Information

Part Number	Package
SW-314	CR-14
SW-314-TB	Unit Mounted on Test Board

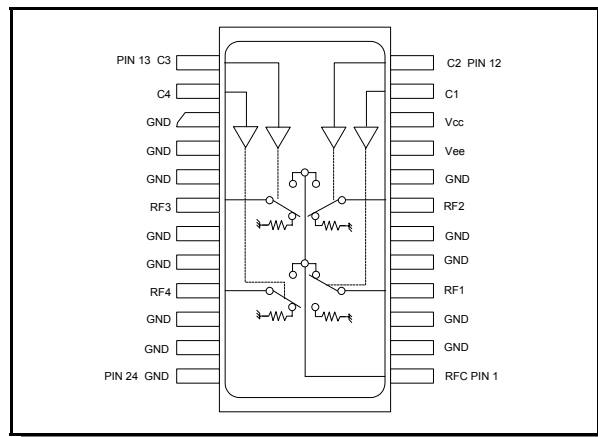
Truth Table

TTL Control Inputs				Condition of Switch			
				RF Common to Each RF Port			
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

0 = TTL Low

1 = TTL High

Functional Schematic



Absolute Maximum Ratings ^{1,2}

Parameter	Absolute Maximum
Max Input Power 0.05 GHz 0.5 - 3.0 GHz ²	+27 dBm +34 dBm
Bias Voltages Vcc Vee	-0.5 to +5.5V -8.5V to +0.5V
Control Voltage ³	-0.5V, to Vcc +0.5V
Operating Temperature	-55°C to +125°C
Storage Temperature	-65°C to +150°C

1. Operation of this device above any one of these parameters may cause permanent damage.
2. When the input power is applied to the terminated port, the absolute maximum is +30 dBm.
3. Standard CMOS TTL interface, latch-up will occur if logic signal is applied prior to power supply.

M/A-COM Inc. 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.

tyco Electronics

M/A-COM

- North America: Tel. (800) 366-2266
- Asia/Pacific: Tel. +81-44-844-8296, Fax +81-44-844-8298
- Europe: Tel. +44 (1908) 574200, Fax +44 (1908) 574300

Electrical Specifications^{4,5} (From -55°C to +85°C)

Parameter	Test Conditions	Frequency	Units	Min	Typ	Max
Insertion Loss	—	DC - 0.5 GHz	dB	—	—	1.3
		DC - 1.0 GHz	dB	—	—	1.4
		DC - 2.0 GHz	dB	—	—	1.6
		DC - 3.0 GHz	dB	—	—	1.8
Isolation	—	DC - 0.5 GHz	dB	50	—	—
		DC - 1.0 GHz	dB	40	—	—
		DC - 2.0 GHz	dB	35	—	—
		DC - 3.0 GHz	dB	30	—	—
VSWR	RFC, RF1 - RF4 (On)	DC - 0.5 GHz	Ratio	—	—	1.6:1
		DC - 1.0 GHz	Ratio	—	—	1.6:1
		DC - 2.0 GHz	Ratio	—	—	1.6:1
		DC - 3.0 GHz	Ratio	—	—	1.8:1
VSWR	RF1 - RF4 (Off)	DC - 0.5 GHz	Ratio	—	—	1.3:1
		DC - 1.0 GHz	Ratio	—	—	1.5:1
		DC - 2.0 GHz	Ratio	—	—	1.9:1
		DC - 3.0 GHz	Ratio	—	—	2.4:1
Trise, Tfall	10% to 90%	—	ns	—	7	—
Ton, Toff	50% Control to 90% / 10% RF	—	ns	—	25	—
Transients	In-Band (peak-peak)	—	mV	—	20	—
1 dB Compression	Input Power	0.05 GHz	dBm	—	+20	—
		0.5 GHz to 3 GHz	dBm	—	+27	—
IP3	Two-Tone Input Power up to +5 dBm	0.05 GHz	dBm	—	+35	—
		0.5 GHz to 3 GHz	dBm	—	+46	—
IP2	Two-Tone Input Power up to +5 dBm	0.05 GHz	dBm	—	+45	—
		0.5 GHz to 3 GHz	dBm	—	+60	—
Vcc	—	—	V	4.5	5.0	5.5
Vee	—	—	V	-8.0	—	-5.0
Icc	Vcc = 4.5 to 5.5 V Vctl = 0 to 0.8V, or Vcc -2.1V to Vcc	—	mA	—	0.2	4.0
Iee	Vee = -5.0V to -8.0V	—	mA	—	0.1	1.0
Vctl Vcti	Logic 0 (TTL)	—	V	0.0	—	0.8
	Logic 1 (TTL)	—	V	2.0	—	5.0
Input Leakage Current (Low)	0 to 0.8V	—	μA	—	—	1.0
Input Leakage Current (High)	2.0 to 5.0V	—	μA	—	—	1.0

4. All specifications apply when operated with bias voltages of +5V for Vcc and -5V for Vee.

5. When DC blocks are used, a 10K ohm return to GND is required on the RFC port.

M/A-COM Inc. 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.

■ North America: Tel. (800) 366-2266

■ Asia/Pacific: Tel.+81-44-844-8296, Fax +81-44-844-8298

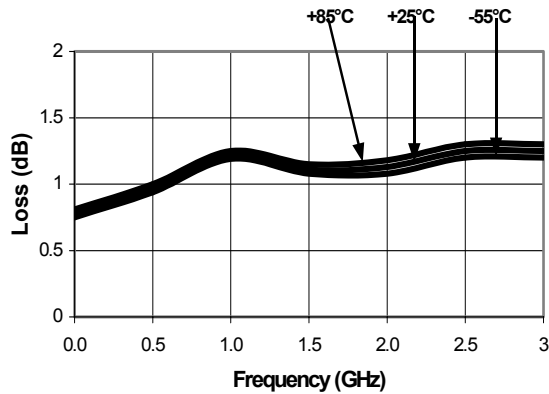
■ Europe: Tel. +44 (1908) 574200, Fax+44 (1908) 574300

tyco / Electronics

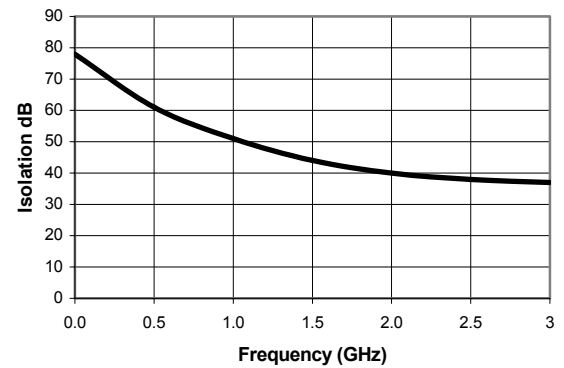
M/A-COM

Typical Performance Curves

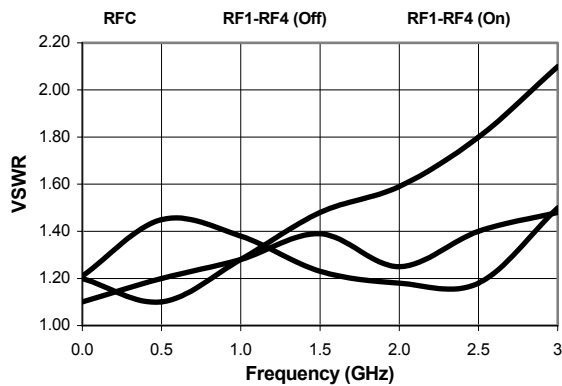
Insertion Loss vs. Frequency



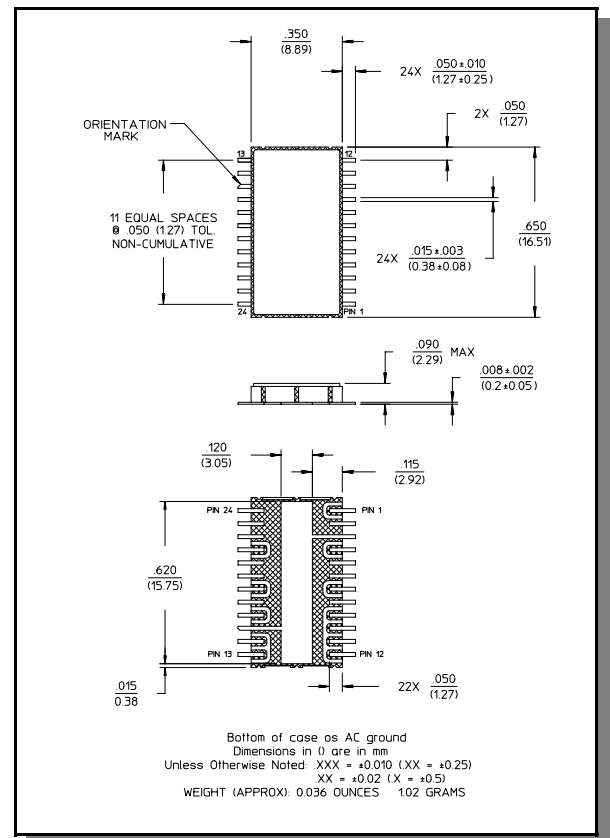
Isolation vs. Frequency



VSWR vs. Frequency



CR-14



M/A-COM Inc. 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.

tyco / Electronics

M/A-COM

■ North America: Tel. (800) 366-2266
 ■ Asia/Pacific: Tel. +81-44-844-8296, Fax +81-44-844-8298
 ■ Europe: Tel. +44 (1908) 574200, Fax +44 (1908) 574300