

GaAs SP4T Absorptive Switch, DC - 3 GHz

V 3.00

SW15-0314

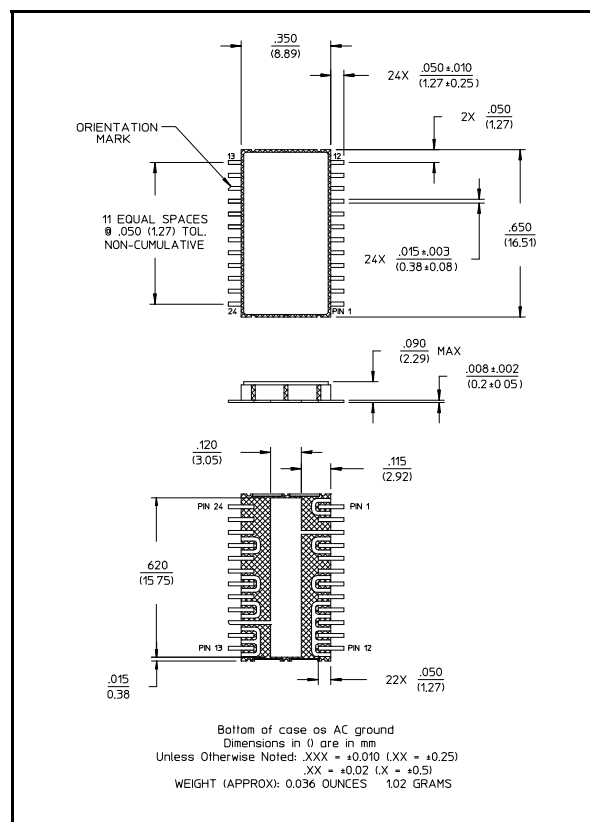
Features

- Integral TTL Driver
- Isolation: 50 dB Typ. At 1 GHz
- Low DC Power Consumption
- Surface Mount Package
- Low Cost/High Performance
- 50 Ohm Nominal Impedance

Description

M/A-COM's SW15-0314 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 SW15-0314 is ideally suited for wireless infrastructure applications. Available with enhanced performance as fully hermetic version. Environmentally screenable as SW-314.

CR-14



Electrical Specifications^{1,2}, T_A = +25°C

Parameter	Test Conditions	Frequency	Units	Min	Typ	Max
Insertion Loss	—	DC - 0.5 GHz	dB	—	1.0	1.3
		DC - 1.0 GHz	dB	—	1.2	1.4
		DC - 2.0 GHz	dB	—	1.2	1.6
		DC - 3.0 GHz	dB	—	1.4	1.8
Isolation	—	DC - 0.5 GHz	dB	50	60	—
		DC - 1.0 GHz	dB	40	50	—
		DC - 2.0 GHz	dB	30	40	—
		DC - 3.0 GHz	dB	25	35	—
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	—	1.6:1	—
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	—	50	—
Ton, Toff	50% Control to 90% / 10% RF	—	ns	—	150	—
Transients	In-Band (peak-peak)	—	mV	—	50	—
1 dB Compression	Input Power	0.05 GHz	dBm	—	+20	—
		0.5 GHz to 3 GHz	dBm	—	+27	—

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

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

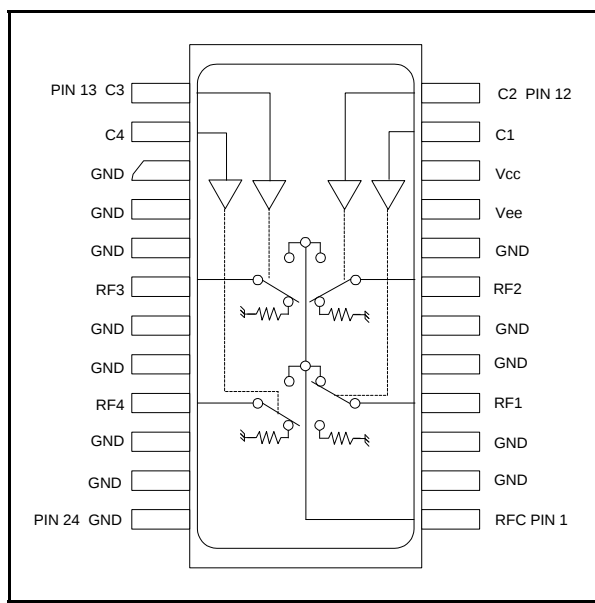
Parameter	Test Conditions	Frequency	Units	Min	Typ	Max
IP3 ³	Two-Tone Input Power up to +5 dBm	0.05 GHz 0.5 GHz to 3 GHz	dBm dBm	— —	+35 +46	— —
IP2 ³	Two-Tone Input Power up to +5 dBm	0.05 GHz 0.5 GHz to 3 GHz	dBm dBm	— —	+45 +60	— —
Vcc	—	—	V	4.5	5.0	5.5
Vee	—	—	V	-8.0	—	-5.0
Icc	Vcc = 4.5 to 5.5 V 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

Absolute Maximum Ratings^{3,4}

Parameter	Absolute Maximum
Max Input Power 0.05 GHz 0.5 - 3.0 GHz ⁴	+27 dBm +34 dBm
Bias Voltages Vcc Vee	-0.5 to +5.5V -8.5V to +0.5V
Control Voltage ⁵	-0.5V, to Vcc +0.5V
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C

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

Functional Schematic



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

Specifications subject to change without notice.

■ North America: Tel. (800) 366-2266
 ■ Asia/Pacific: Tel.+81-44-844-8296, Fax +81-44-844-8298
 ■ Europe: Tel. +44 (1344) 869 595, Fax+44 (1344) 300 020

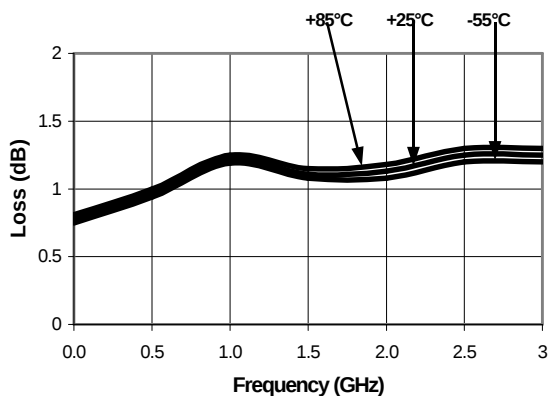
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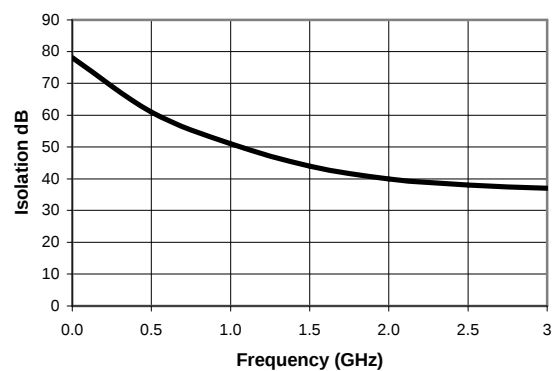
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Typical Performance Curves

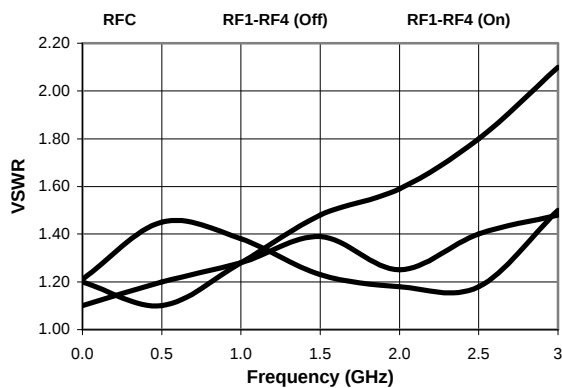
Insertion Loss vs. Frequency



Isolation vs. Frequency



VSWR vs. Frequency



Ordering Information

Part Number	Package
SW15-0314	CR-14

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