

GaAs SP4T Absorptive Switch

DC - 3 GHz

SW15-0314

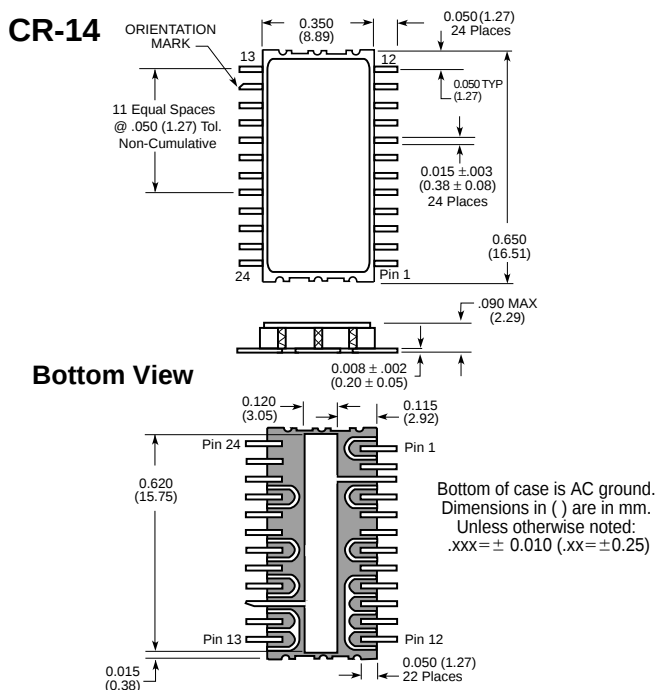
V2.00

Features

- Integral Driver
- Isolation: 50 dB Typ. at 1 GHz
- Low DC Power Consumption
- Surface Mount Package
- TTL and CMOS Input Compatible
- Low Cost/High Performance

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.



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

Parameter	Test Conditions	Units	Minimum	Typical	Maximum
Reference Insertion Loss	DC - 0.5 GHz DC - 1.0 GHz DC - 2.0 GHz DC - 3.0 GHz	dB dB dB dB		1.0 1.2 1.2 1.4	1.3 1.4 1.6 1.8
Isolation	DC - 0.5 GHz DC - 1.0 GHz DC - 2.0 GHz DC - 3.0 GHz	dB dB dB dB	50 40 30 25	60 50 40 35	
VSWR	DC - 0.5 GHz DC - 1.0 GHz DC - 2.0 GHz DC - 3.0 GHz	RFC, RF1 - RF4 (On) 1.6:1 Typ. 1.6:1 Typ. 1.6:1 Typ. 1.8:1 Typ.		RF1 - RF4 (Off) 1.3:1 Typ. 1.5:1 Typ. 1.9:1 Typ. 2.4:1 Typ.	
Trise, Tfall Ton, Toff Transients	10% to 90% 50% Control to 90%/10% RF In-band (peak-peak)	nS nS mV		50 150 50	
1 dB Compression ³	Input Power 0.05 GHz Input Power 0.5 - 3.0 GHz	dBm dBm		+20 +27	
Input IP ₃ ³	For two-tone input power up to +5 dBm 0.05 GHz 0.5 - 3.0 GHz	dBm dBm		+35 +46	
Input IP ₂ ³	For two-tone input power up to +5 dBm 0.05 GHz 0.5 - 3.0 GHz	dBm dBm		+45 +60	
V _{CC} V _{EE}		V V	4.5 -8.0	5.0	5.5 -5.0
I _{CC} ⁴	V _{CC} = 4.5 to 5.5 V V _{ctl} = 0 to 0.8 V, or V _{CC} - 2.1 V to V _{CC}	mA			4.0
I _{EE}	V _{EE} = -5.0 to -8.0 V	mA			1.0

1. All specifications apply when operated with bias voltages of +5V for V_{CC} and -5.0V to -8.0V for V_{EE} and 50Ω impedance at all RF ports unless otherwise specified.

2. For this switch to meet the guaranteed specifications, it is necessary to have a DC return on either RF1 or RF2. The DC return can be either a 10 KΩ resistor, or an RF choke.

3. V_{EE} = -5V for the typical numbers given.

4. For CMOS control levels, V_{CC} current is 2 μA typ. and V_{EE} current is <100 μA typ.

Specifications Subject to Change Without Notice.

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Absolute Maximum Ratings^{1, 2}

Parameter	Absolute Maximum
Max. Input Power	
0.05 GHz	+27 dBm
0.5 - 3.0 GHz ²	+34 dBm
Bias Voltages	
V _{CC}	-0.5 to +5.5V
V _{EE}	-8.5V to +0.5V
Control Voltage	-0.5V to V _{CC} +0.5V
Operating Temperature	-40°C to +85°
Storage Temperature	-65°C to +150°C

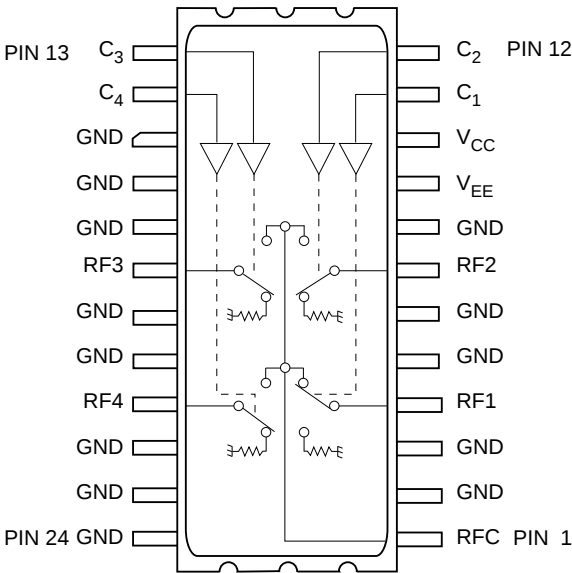
1. Operation of this device above any one of these parameters may cause permanent damage.
2. When the input power is applied to the terminated port, the absolute maximum is +30 dBm.

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

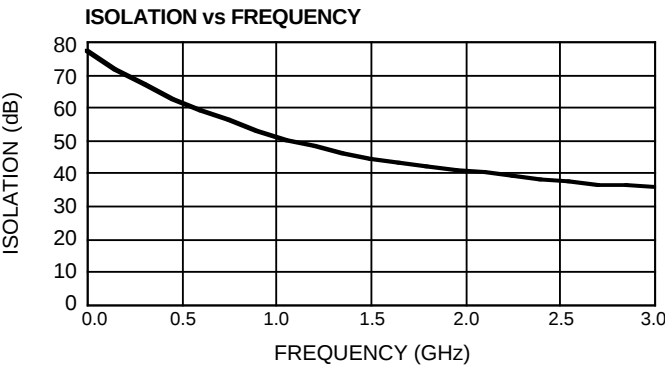
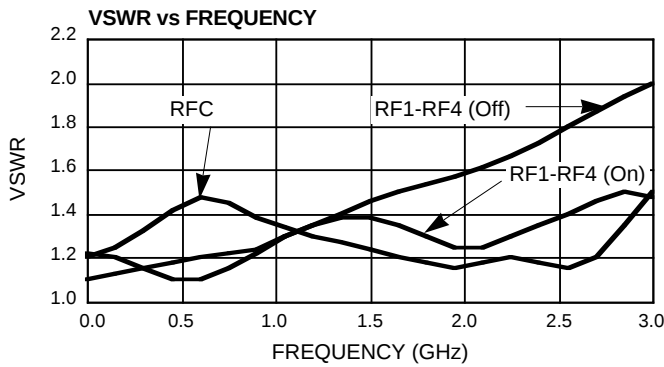
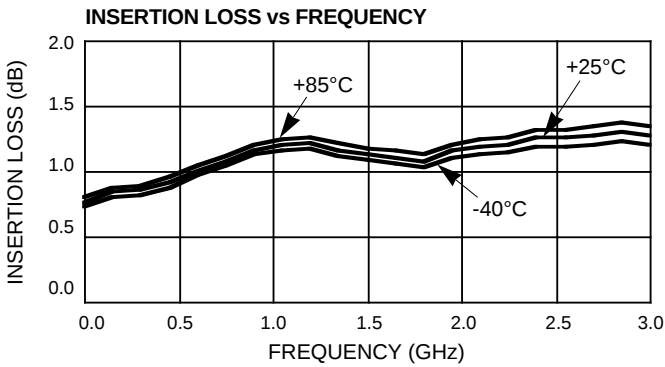
Functional Schematic



Ordering Information

Part No.	Package
SW15-0314	Ceramic

Typical Performance



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