

GaAs SP4T Absorptive Switch, DC-3.0 GHz

**SW-314-PIN
V6**

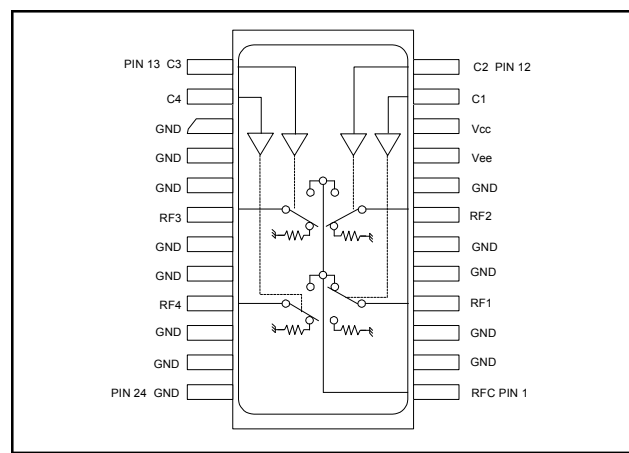
Features

- 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
- Lead-Free CR-14 Package
- 260°C Reflow Compatible

Description

M/A-COM's SW-314-PIN 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-PIN is ideally suited for RF/IF communications applications. Environmental screening is available. Contact the factory for information.

Functional Block Diagram



Pin Configuration

Pin No.	Function	Pin No.	Function
1	RFC	13	C3
2	GND	14	C4
3	GND	15	GND
4	RF1	16	GND
5	GND	17	GND
6	GND	18	RF3
7	RF2	19	GND
8	GND	20	GND
9	Vee	21	RF4
10	Vcc	22	GND
11	C1	23	GND
12	C2	24	GND

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

Ordering Information

Part Number	Package
SW-314-PIN	Bulk Packaging
SW-314-TB	Sample Test Board

Note: Reference Application Note M513 for reel size information.

Note: Die quantity varies.

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

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Electrical Specifications: (From –55°C to +85°C), $Z_0 = 50\Omega$ ^{1,2}

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 Vctl	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

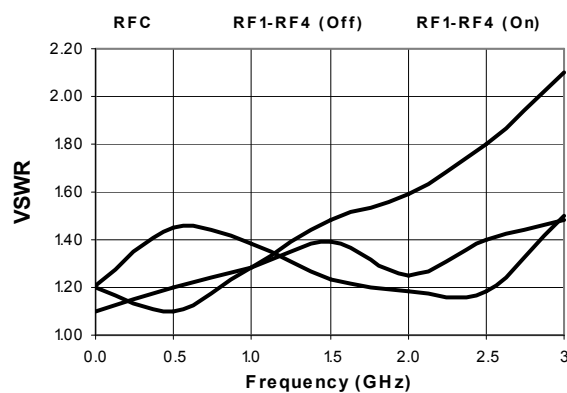
1. All specifications apply when operated with bias voltages of +5V for Vcc and –5V for Vee.
2. When DC blocks are used, a 10K ohm return to GND is required on the RFC port.

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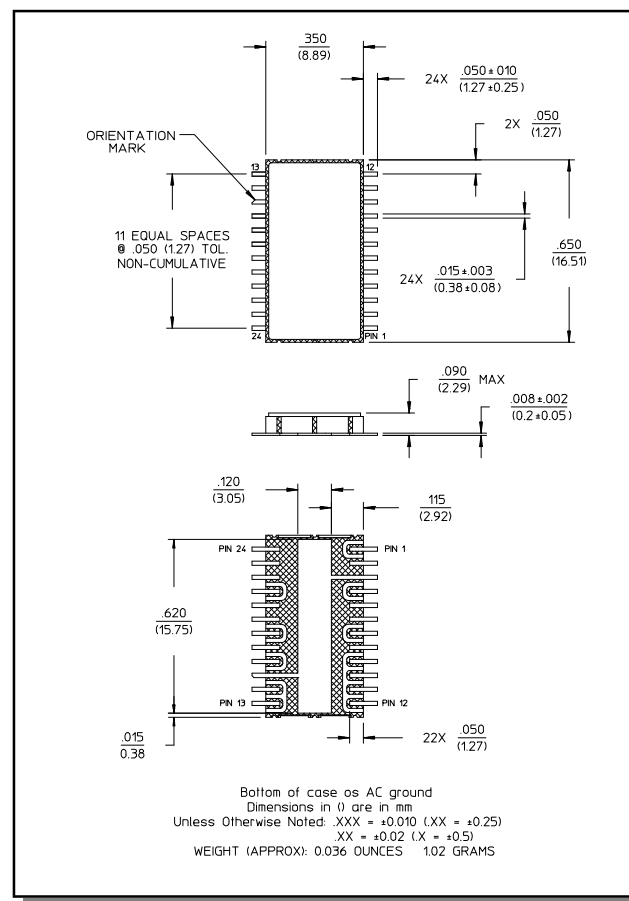
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Typical Performance Curves

VSWR vs. Frequency



Lead-Free, CR-14 Ceramic Package[†]



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