

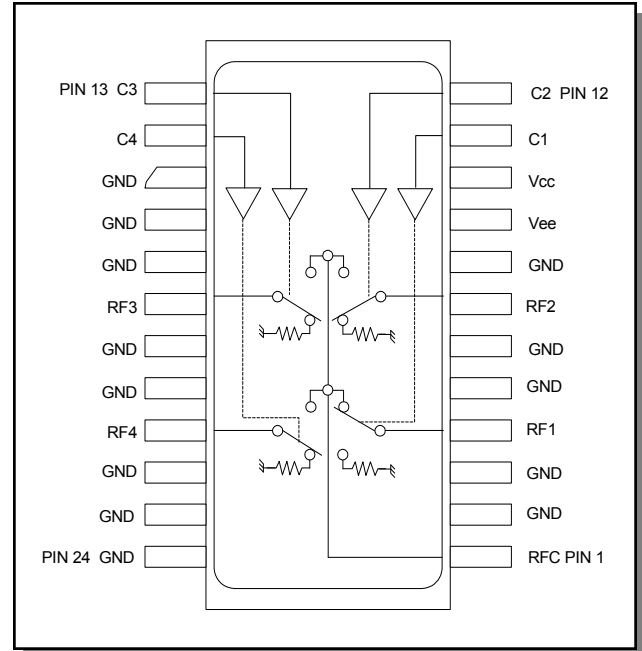
Features

- 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
- Lead-Free CR-14 Package
- 260°C Reflow Compatible
- RoHS* Compliant

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.

Functional Block Diagram



Ordering Information

| Part Number | Package |
|--------------|-------------------|
| SW15-0314 | Bulk Packaging |
| SW15-0314-TB | Sample Test Board |

Note: Reference Application Note M513 for reel size information.

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.

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

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

| 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 | — |
| 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 |

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.

Absolute Maximum Ratings ^{3,4,5}

| Parameter | Absolute Maximum |
|---|---|
| Max Input Power 0.05 GHz 0.5 - 3.0 GHz ⁵ | +27 dBm +34 dBm |
| V _{CC} | -0.5V ≤ V _{CC} ≤ +7.0V |
| V _{EE} | -8.5V ≤ V _{EE} ≤ +0.5V |
| V _{CC} - V _{EE} | -0.5V ≤ V _{CC} - V _{EE} ≤ 14.5V |
| V _{in} ⁶ | -0.5V ≤ V _{in} ≤ V _{CC} + 0.5V |
| Operating Temperature | -40°C to +85°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.
- 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.

Handling Procedures

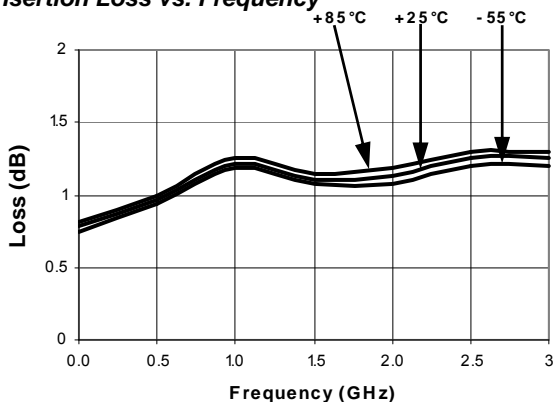
Please observe the following precautions to avoid damage:

Static Sensitivity

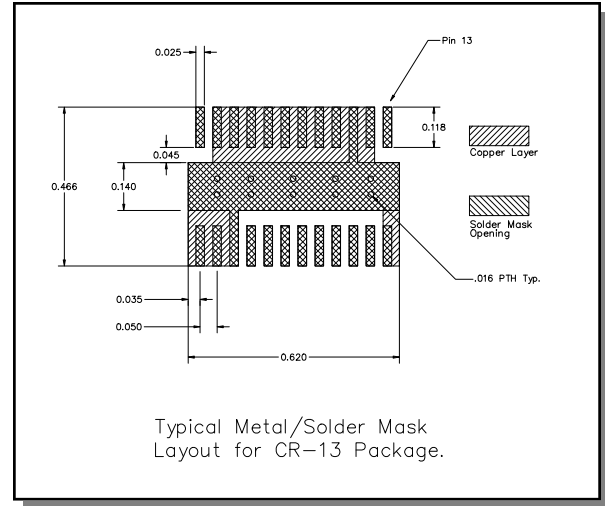
Gallium Arsenide Integrated Circuits are sensitive to electrostatic discharge (ESD) and can be damaged by static electricity. Proper ESD control techniques should be used when handling these devices.

Typical Performance Curves

Insertion Loss vs. Frequency



Recommended PCB Configuration

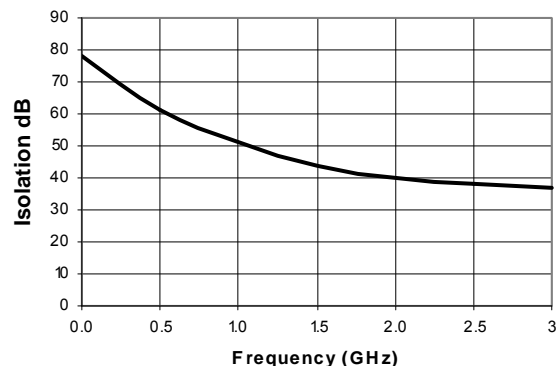


Truth Table (Switch)

| 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 |

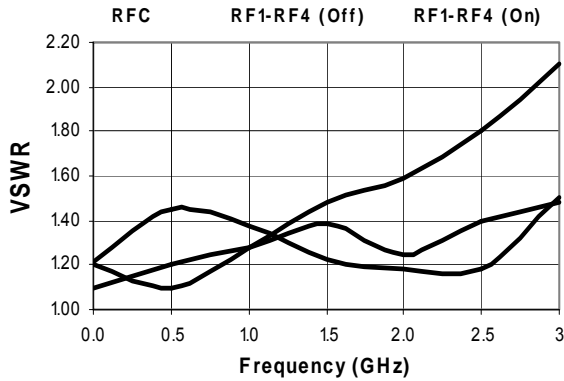
0 = TTL Low; 1 = TTL High

Isolation vs. Frequency

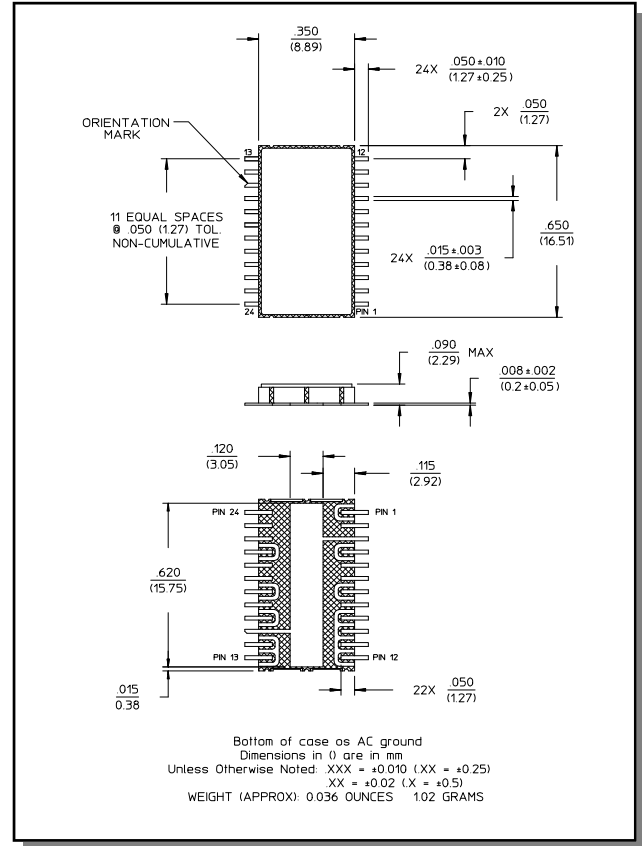


Typical Performance Curves

VSWR vs. Frequency



Lead-Free, CR-14 Ceramic Package[†]



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

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Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

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