Stanford Microdevices

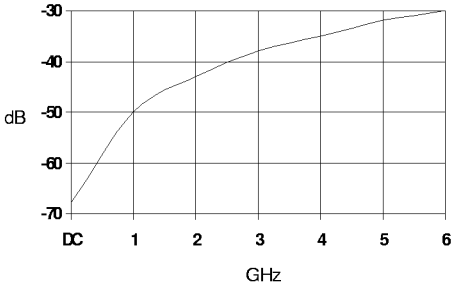
## Product Description

Stanford Microdevices' SSW-124 is a high perfomance Gallium Arsenide Field Effect Transistor MMIC switch housed in a low-cost surface-mountable 8-pin ceramic package.

This single-pole, double-throw, non-reflective switch consumes less than 50uA and operates at -5V and 0V for control bias. Its high isolation and low insertion loss, makes it ideal for T/R switching in analog and digital wireless communication systems.

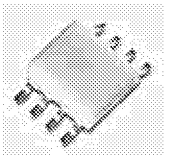
The die is fabricated using 0.5 micron FET process with gold metallization and silicon nitride passivation to achieve excellent performance and reliability.

**Isolation vs. Frequency**
**$V_{Control}$ = -5 V**




# SSW-124

## DC-6 GHz High Isolation GaAs MMIC SPDT Switch



## Product Features

- **High Isolation: 42dB at 2GHz, 30dB at 6GHz**
- **Low DC Power Consumption**
- **Non-reflective**
- **Broadband Performance - True DC Operation**
- **Low Cost Surface-Mountable Ceramic Package**

## Applications

- **Analog/Digital Wireless System**
- **Spread Spectrum**
- **GPS**

**Electrical Specifications at Ta = 25C**

| Symbol | Parameters: Test Conditions | | Units | Min. | Typ. | Max. |
|---|---|---|---|---|---|---|
| Ins | Insertion Loss | f = 0.05-2.0GHz<br>f = 2.00-4.0GHz<br>f = 4.00-6.0GHz | dB<br>dB<br>dB | | 0.7<br>1.0<br>1.4 | 1.1<br>1.5 |
| Isol | Isolation | f = 0.05-2.0GHz<br>f = 2.00-4.0GHz<br>f = 4.00-6.0GHz | dB<br>dB<br>dB | 40<br>30<br>25 | 50<br>40<br>30 | |
| VSWRon | Input & Output VSWR<br>(on or low loss state) | f = 0.05-2.0GHz<br>f = 2.00-4.0GHz<br>f = 4.00-6.0GHz | | | 1.15<br>1.25<br>1.50 | |
| VSWRoff | Input & Output VSWR<br>(off or isolated state) | f = 0.05-1.0GHz<br>f = 1.00-2.0GHz<br>f = 2.00-4.0GHz | | | 1.15<br>1.25<br>1.50 | |
| P1dB | Output Power at 1dB Compression<br>f= 0.5-6.0GHz | V = -5V<br>V = -8V | dBm<br>dBm | | +26<br>+29 | |
| TOIP | Third Order Intercept Point<br>f= 0.5-6.0GHz | V = -5V<br>V = -8V | dB<br>dB | | +45<br>+48 | |
| Id | Device Current | | uA | | 40 | |
| Isw | Switching Speed<br>50% control to 10%/90% RF | | nsec | | 3 | |

Switches

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# SSW-124 DC-6 GHz Absorptive SPDT GaAs Switch

## Absolute Maximum Ratings

| | |
|---|---|
| RF Input Power | 2W Max>500MHz |
| Control Voltage | -10V |
| Operating Temperature | -45C to +85C |
| Storage Temperature | -65C to +150C |
| Thermal Resistance | 20 deg C/W |

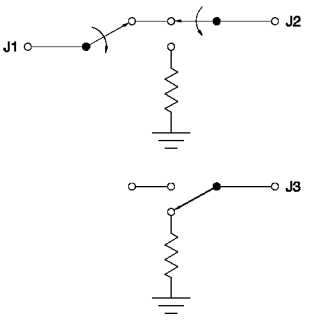
## Truth Table

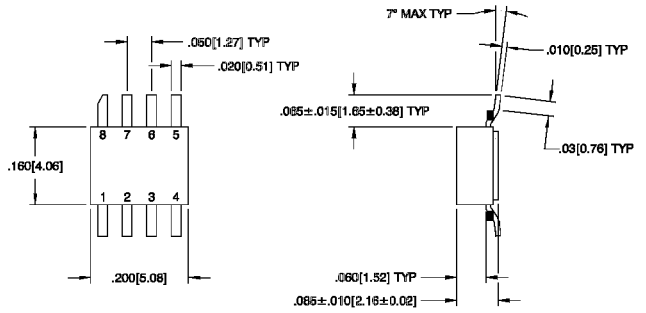
| V1 | V2 | J1-J2 | J1-J3 |
|---|---|---|---|
| 0 | -5 | Low Loss | Isolation |
| -5 | 0 | Isolation | Low Loss |

## Pin Out

| Pin | Function |
|---|---|
| 1 | GND |
| 2 | J1 |
| 3 | GND |
| 4 | GND |
| 5 | J2 |
| 6 | V1 |
| 7 | V2 |
| 8 | J3 |

## Switch Schematic

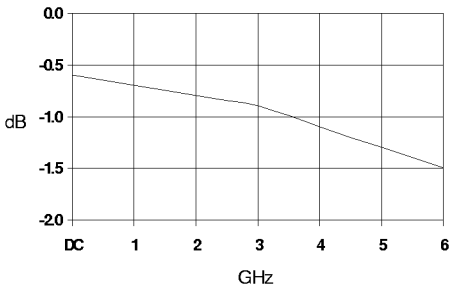



Pin numbers shown for reference only, not marked on part

## Insertion Loss vs. Frequency

VControl = -5 V




## On Port Input/Output VSWR vs. Frequency

VControl = -5 V