SSW-424

DC-6 GHz High Power GaAs MMIC SPDT Switch

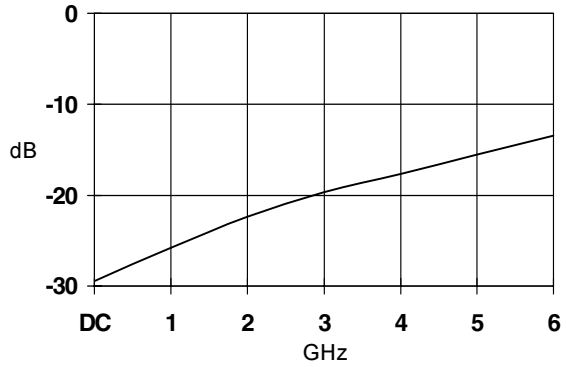
Product Description

Stanford Microdevices' SSW-424 is a high performance Gallium Arsenide Field Effect Transistor MMIC switch housed in a low-cost surface mountable small outline ceramic package.

This single-pole, double-throw reflective switch consumes less than 50uA and can operate with positive or negative 3V to 8V supply voltages, making it suitable for use in both infrastructure and subscriber equipment. This switch can be used in all analog and digital wireless communication systems including (but not limited to) AMPS, PCS, DECT, IS-95, IS-136, 802.11, CDPD and GSM.

At +5V or –5V bias, typical output power at 1dB compression is 3 watts. 1dB output power over 4 watts and IP3 over +55dBm may be achieved with higher control voltages.

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



Product Features

- **High Compression Point : up to 4 Watts**
- **HIgh LInearity : TOIP +55dBm at 2GHz**
- **Low DC Power Consumption**
- **Low Insertion Loss : 0.7dB at 2GHz**
- **Operates from Positive or Negative 3V to 8V Supplies**
- **Low Cost Surface-Mountable Ceramic Package**

Applications

- **Analog/Digital Wireless Communications**
- **Spread Spectrum**
- **AMPS, PCS, DECT, IS-95, IS-136, 802.11, CDPD and GSM.**

Electrical Specifications at Ta = 25C

Symbol	Pramerters & Test Conditions: Zo = 50 ohms v = +5 or -5V		Units	Min.	Typ.	Max.
Ins	Insertion Loss	f = 0.05 - 2.0 GHz f = 2.00 - 4.0 GHz f = 4.00 - 6.00 GHz	dB dB dB		0.7 0.9 1.2	1.0 1.3
Isol	Isolation	f = 0.05 - 2.0 GHz f = 2.00 - 4.0 GHz f = 4.00 - 6.00 GHz	dB dB dB	20 15	25 20 15	
VSWR on	Input & Output VSWR (on or low loss state)	f = 0.05 - 2.0 GHz f = 2.00 - 6.0 GHz			1.1 1.3	
VSWR off	Input & Output VSWR (off or isolated state)	f = 0.05 - 2.0 GHz f = 2.00 - 6.0 GHz			1.1 1.3	
P_{1dB}	Output Power @ 2.0 GHz at 1 dB Compression	V = +8V or -8V V = +5V or -5V V = +3V or -3V	dBm dBm dBm		+36 +34 +31	
TOIP	Third Order Intercept	V = +8V or -8V V = +5V or -5V V = +3V or -3V	dBm dBm dBm		+55 +53 +50	
Id	Device Current		uA		40	
Isw	Switching Speed 10% to 90% or 90% to 10%		nsec		10	

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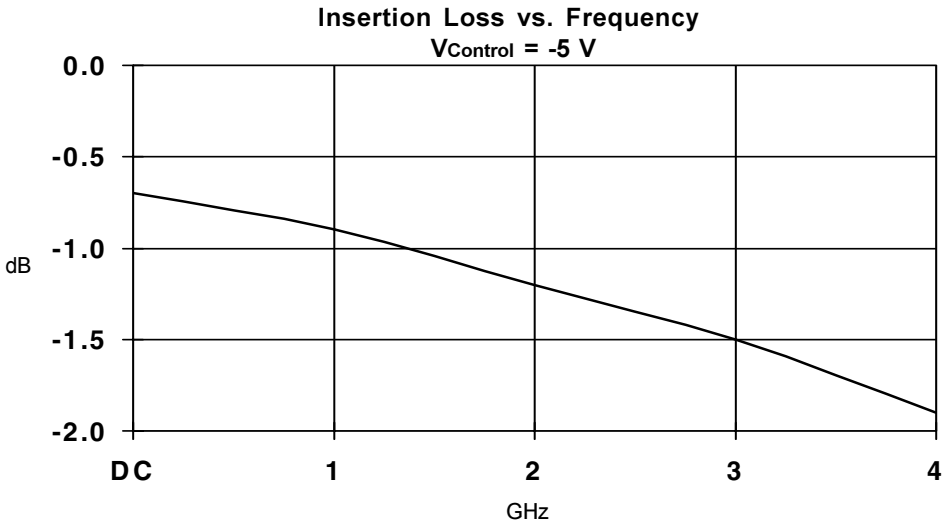
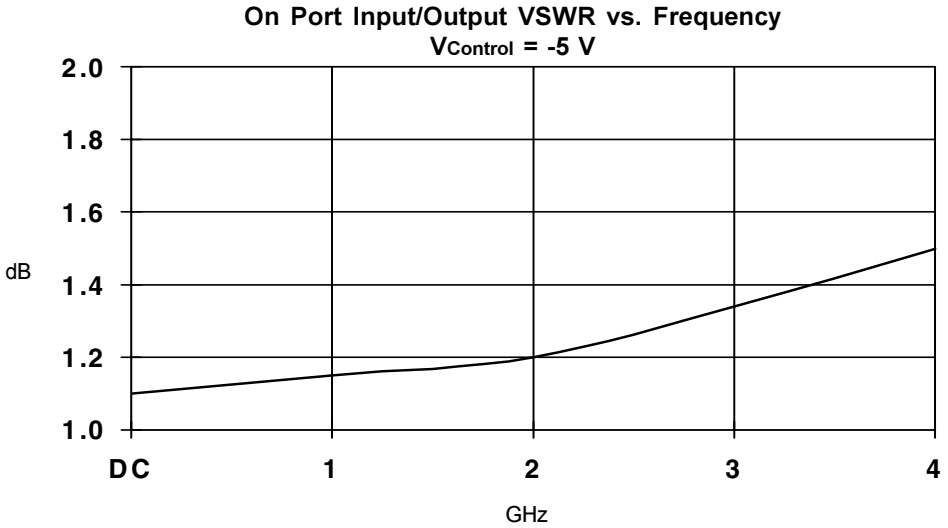
Absolute Maximum Ratings

Operation of this device above any one of these parameters may cause permanent damage.

RF Input Power	6W Max>500MHz
Control Voltage	-8V or +8V
Operating Temperature	-45C to +85C
Storage Temperature	-65C to +150C
Thermal Resistance	20 deg C/W





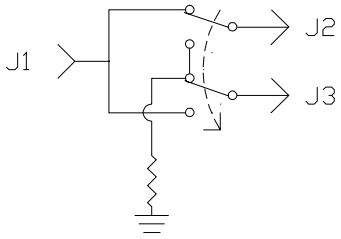
SSW-424 DC-6.0 GHz GaAs MMIC Switches

Caution ESD Sensitive:
Appropriate precautions in handling, packaging and testing devices must be observed.

Part Number Ordering Information

Part Number	Devices Per Reel	Reel Size
SSW-424	500	7"

Switch Schematic



Note 1: The switch state shown is when V1 is 3v to 8v greater than V2.

Truth Table

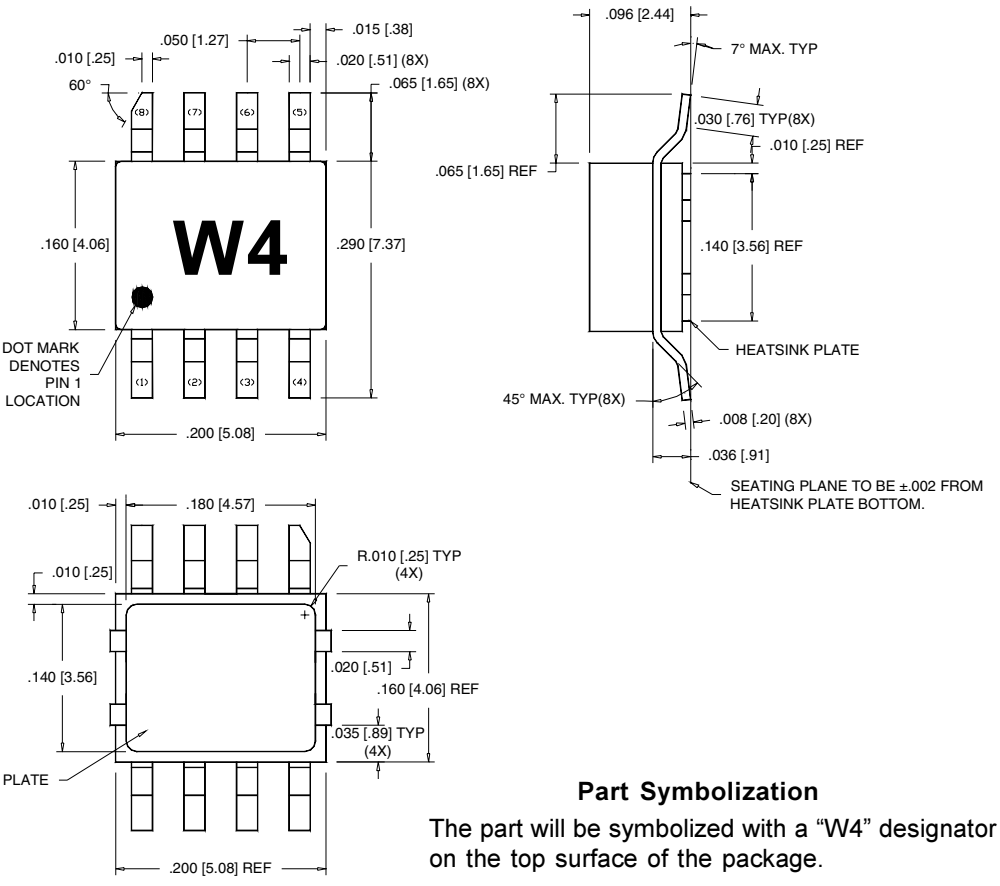
Vdd (note 1)	V1 (note 2)	V2 (note 2)	J1-J2	J1-J3
0	0	-V	Low Loss	Isolation (Hi-Z)
0	-V	0	Isolation (Hi-Z)	Low Loss
+V (note 3)	0	+V	Isolation (Hi-Z)	Low Loss
+V (note 3)	+V	0	Low Loss	Isolation (Hi-Z)

Note 1: The "Vdd" pin should be permanently connected to the most positive control voltage. If using positive (0V / 5V) control signals, Vdd = 5V. If using negative (-5V / 0V) control voltages, Vdd = 0V.
Note 2: The control voltage (v = |V1 - V2|) may be from 3V to 8V in magnitude.
Note 3: Decouple "Vdd" to a good RF ground, and use DC blocking capacitors on all RF pins (J1, J2, & J3).

Pin Out

Pin	Function	Description
1	GND	Ground
2	V1	Control 1
3	J1	RF in
4	V2	Control 2
5	J3	RF out 2
6	Vdd	Bias Control
7	GND	Ground
8	J2	RF out 1

Package Dimensions



Part Symbolization

The part will be symbolized with a "W4" designator on the top surface of the package.

DIMENSIONS ARE IN INCHES [MM]