SPDT T/R Switch
5.0 - 6.0 GHz

MA0S506AJ
V2

Features

- Ideal for 802.11a Hiperlan Applications
- Positive Control Voltages
- +32 dB One dB Compression Point
- Fast Switching Speed
- No External Components Required
- MSOP-8 Package

Description

The MA0S506AJ is a medium power 5.0-6.0 SPDT switch. Typical Applications include the transmit/ receive functions in 802.11a and Hiperlan, and fixed wireless access applications. All RF impedances are 50 Ω, and all RF ports are internally DC blocked. The switch operates over a typical voltage range of 2.7 to 5.5 volts. The MA0S506AJ is offered in a MSOP-8 package.

The MA0S506AJ is fabricated using M/A-COM's 0.5 micron MESFET process for a low single supply voltage, high linearity, and excellent reliability.

Ordering Information [1]

Part Number	Package
MA0S506AJ-R7	7 inch, 1000 piece reel
MA0S506AJ-R13	13 inch, 3000 piece reel
MA0S506AJ-SMB	Sample Test Board

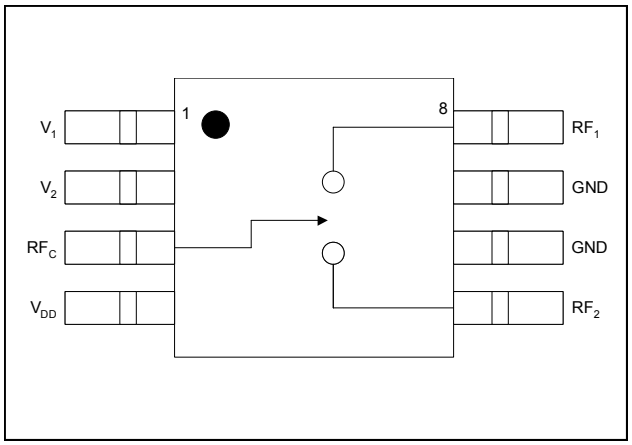
1. Reference Application Note M513 for reel size information.

Absolute Maximum Ratings [2,3]

Parameter	Absolute Maximum
Max Input Power	+33 dBm
Control Voltages	+8.0 volts
Supply Voltages	+8.0 volts
Operating Temperature	-40°C to +100°C
Channel Temperature	+150°C
Storage Temperature	-40°C to +150°C

2. Exceeding any one or combination of these limits may cause permanent damage to this devise.
3. M/A-COM does not recommend sustained operation near these survivability limits.

Functional Schematic



Pin Configuration

Pin No.	Pin Name	Description
1	V_1	Control Voltage 1
2	V_2	Control Voltage 2
3	RF_C	RF Common Port
4	V_{DD}	Supply Voltage
5	RF_2	RF Port 2
6	GND	Ground
7	GND	Ground
8	RF_1	RF Port 1

• **North America** Tel: 800.366.2266 / Fax: 978.366.2266
• **Europe** Tel: 44.1908.574.200 / Fax: 44.1908.574.300
• **Asia/Pacific** Tel: 81.44.844.8296 / Fax: 81.44.844.8298

Visit www.macom.com for additional data sheets and product information.

Electrical Specifications: T_A = 25°C, Z_0 = 50 Ω [4]

Parameter	Test Conditions	Unit	Min.	Typ.	Max.
Insertion Loss		dB	—	1.4	1.8
Isolation		dB	25	28	—
Return Loss		dB	—	9	—
T_{RISE}, T_{FALL} T_{ON}, T_{OFF}	10% to 90% RF, 90% to 10% RF 50% Control to 90% RF, 50% Control to 10% RF	nS nS	— —	10 25	— —
1 dB Compression	V_1/V_2 = 0/3 V, V_{DD} = 3 V V_1/V_2 = 0/5 V, V_{DD} = 5 V	dBm dBm	— —	32 35	— —
Third Order Intercept		dBm	—	44	—

4. Unless otherwise specified, input power is -10 dBm, V_{DD} is +5 V, control voltages are 0/+5 V, and test frequency is 5.775 GHz

Switch Logic Table [5,6]

Insertion Loss Path	Isolated Path	V_1	V_2
RF_1/RF_C	RF_2/RF_C	1	0
RF_2/RF_C	RF_1/RF_C	0	1

5. "0" = 0 +/- 0.2 volts
6. "1" = +2.7 to +5 volts, equal to V_{DD}

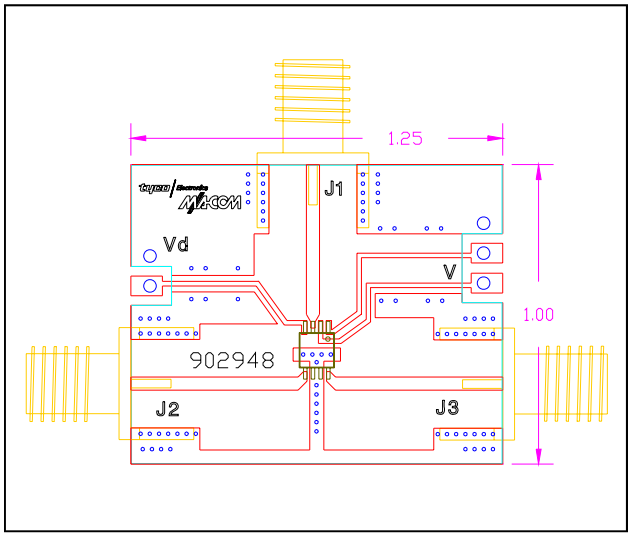
Handling Procedures

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.

Application Schematic



Board material: Rogers Duroid RO4350, 20 mil thick dielectric (e_r=3.48). All RF traces are 50 ohms (43mils wide).

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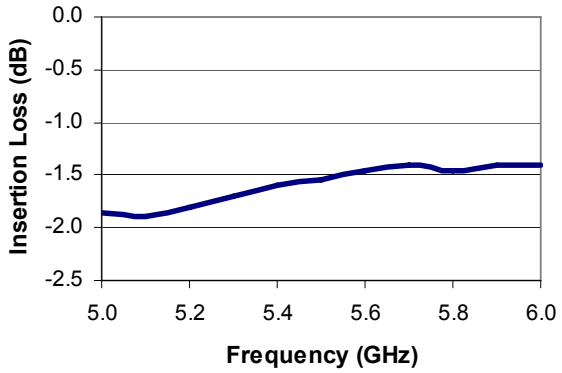
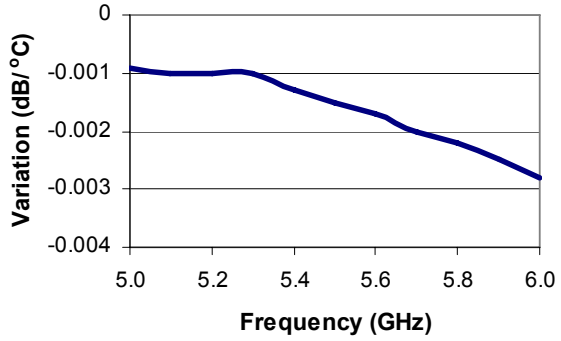
Typical Performance

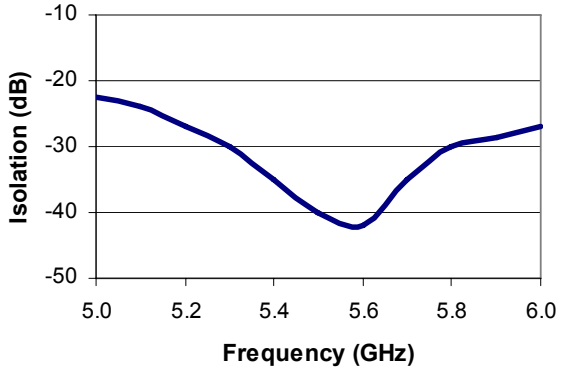
Insertion Loss vs. Frequency



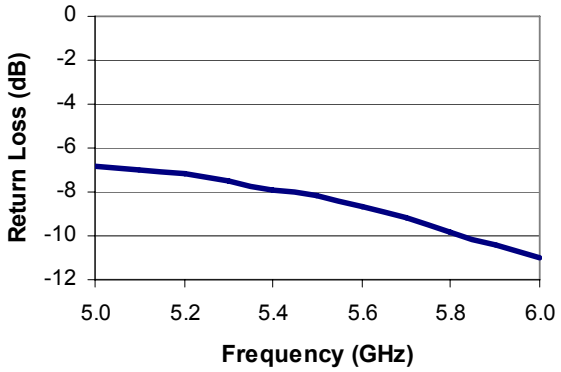
Insertion Loss Variation vs. Frequency



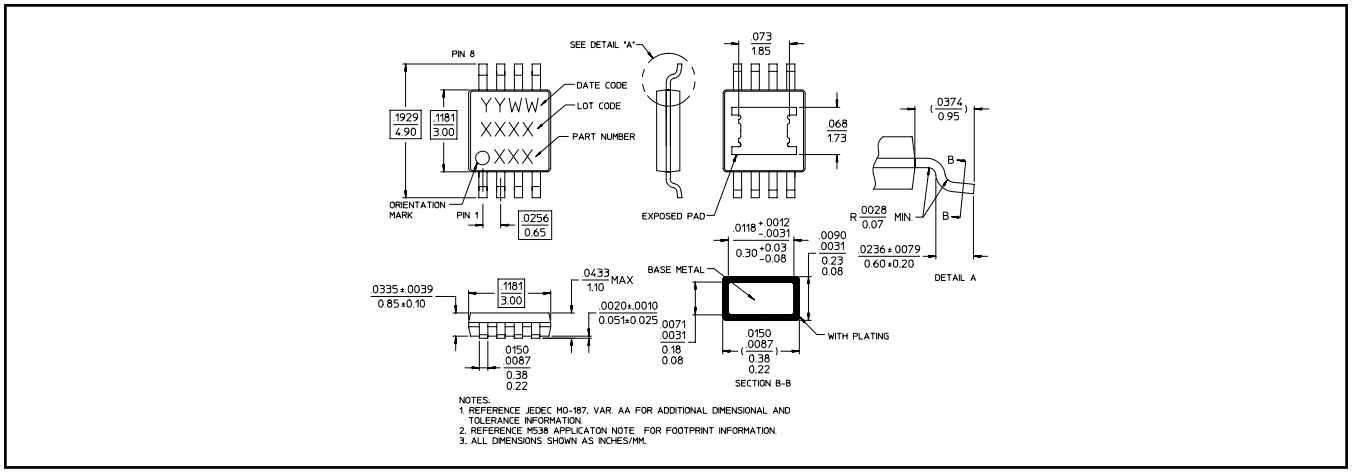
Isolation vs. Frequency



Return Loss vs. Frequency



MSOP-8 Package†



†Meets JEDEC moisture sensitivity level 1 requirements.

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