GaAs SPDT High Isolation Terminated Switch 0.5 - 2.0 GHz

SW-394
V5

Features

- Terminated RF Output
- High Isolation: 35 dB up to 2 GHz
- Positive Control
- Nanosecond Switching Speed
- CMOS Compatible Logic
- SOIC-8 Plastic Package

Description

M/A-COM's SW-394 is a GaAs monolithic SPDT terminated switch in a low cost SOIC 8-lead plastic package. The SW-394 is ideally suited for use where low power consumption and high isolation are required.

Typical applications include transmit/receive switching, switch matrices and switched filter banks in systems such as radio and cellular equipment.

The SW-394 is fabricated using a mature 1-micron gate length GaAs MESFET process. The process features full chip passivation for increased performance and reliability.

Ordering Information [1]

Part Number	Package
SW-394-PIN	Bulk Packaging
SW-394TR	1000 piece reel
SW-394SMB	Sample Board

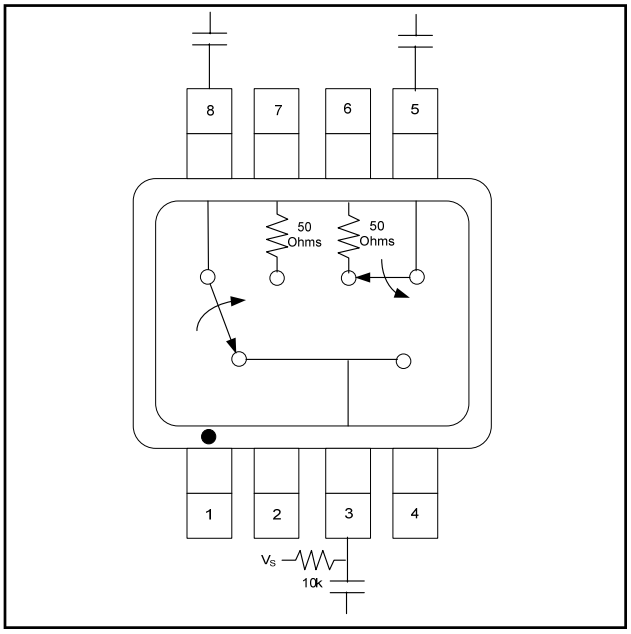
1. Reference Application Note M513 for reel size information.

Absolute Maximum Ratings [2,3]

Parameter	Absolute Maximum
Input Power	+34 dBm
Operating Voltage (V_S, V_A, V_B)	+8.5 Volts
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C

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

Functional Schematic



Pin Configuration [4]

Pin No.	Function	Pin No.	Function
1	B	5	RF1
2	GND	6	GND
3	RFC	7	GND
4	A	8	RF2

4. Blocking capacitors are required on all RF ports. V_S can be applied at any RF port using 10K or greater pull-up resistor.

Truth Table [5,6,7]

Control Input A	Control Input B	RFC-RF2	RFC-RF1
0	1	Off	On
1	0	On	Off

5. 0 = 0 ± 0.2 VDC
6. 1 = +5 ± 0.2 VDC,
7. Vs = +5 ± 0.2 VDC, 25 µA Max. Current Total

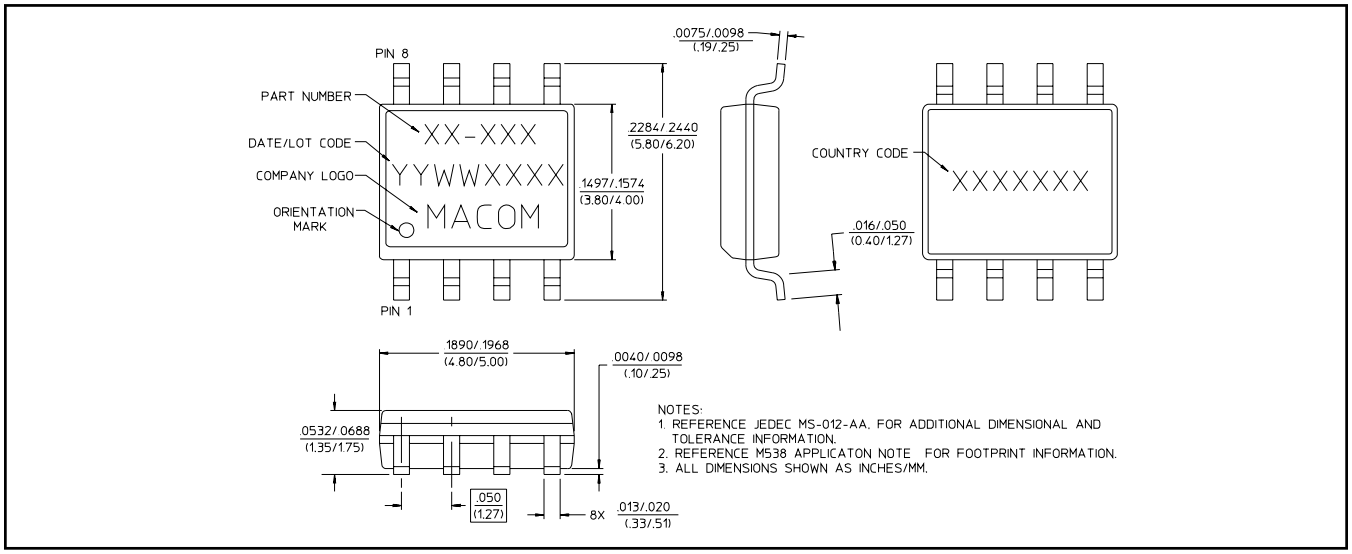
• **North America** Tel: 800.366.2266 / Fax: 978.366.2266
• **Europe** Tel: 44.1908.574.200 / Fax: 44.1908.574.300
• **Asia/Pacific** Tel: 81.44.844.8296 / Fax: 81.44.844.8298

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

Electrical Specifications: T_A = 25°C

Parameter	Test Conditions	Units	Min.	Typ.	Max.
Insertion Loss	0.5 - 1.0 GHz 1.0 - 2.0 GHz	dB dB	— —	1.3 1.4	1.5 1.6
Isolation	0.5 - 1.0 GHz 1.0 - 2.0 GHz	dB dB	37 32	40 35	— —
VSWR	0.5 - 1.5 GHz	Ratio	—	1.6:1	—
1 dB Compression	Input Power, +5 V Control/Supply 0.5 GHz 0.9 GHz 1.5 GHz	 dBm dBm dBm	 — — —	 24 24 25	 — — —
Trise, Tfall	10% to 90% RF, 90% to 10% RF	ns	—	34	—
Ton, Toff	50% Control to 90% RF, 50% Control to 10% RF	ns	—	36	—
Transients	In-Band	mV	—	22	—
Input IP_2	2-Tone, 5 MHz spacing, +10 dBm each 0.5 GHz 0.9 GHz	 dBm dBm	 — —	 67 72	 — —
Input IP_3	2-Tone, 5 MHz spacing, +10 dBm each 0.5 GHz 0.9 GHz	 dBm dBm	 — —	 47 47	 — —
Control Current	—	µA	—	10	25

SOIC-8†



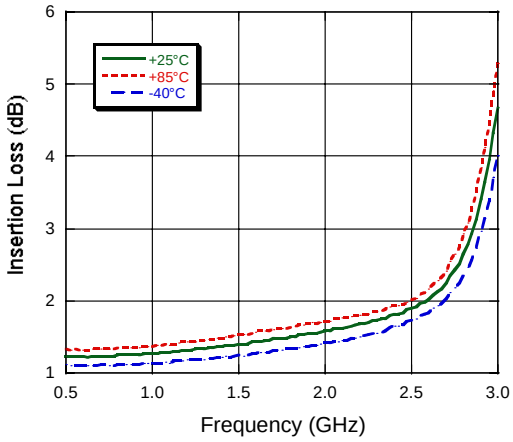
†Meets JEDEC moisture sensitivity level 1 requirements.

- **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

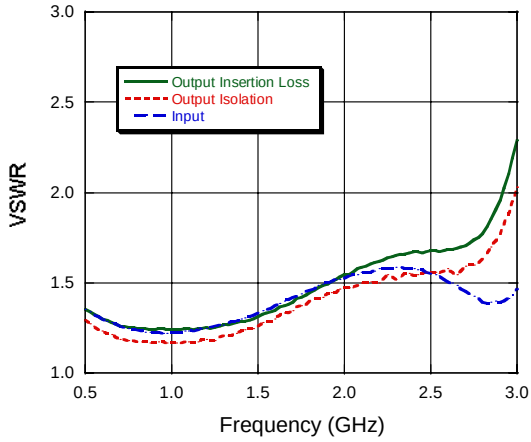
Visit www.macom.com for additional data sheets and product information.

Typical Performance Curves

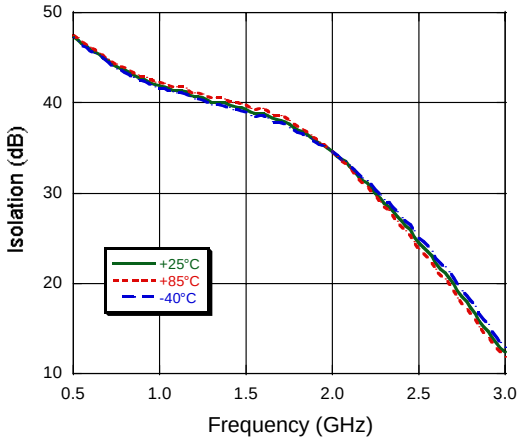
Insertion Loss vs. Frequency



VSWR vs. Frequency



Isolation vs. Frequency



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.

- **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.