MASWSS0162

GaAs SPST Switch
DC - 2.5 GHz

Rev. V3

Features

- Very Low Power Consumption: 50 µW
- Low Insertion Loss: 1.0 dB
- High Isolation: 35 dB up to 2 GHz
- Very High Intercept Point: 46 dBm IP3
- Nanosecond Switching Speed
- Temperature Range: -40°C to +85°C
- Lead-Free SOIC-8 Plastic Package
- 100% Matte Tin Plating over Copper
- Halogen-Free "Green" Mold Compound
- 260°C Reflow Compatible
- RoHS* Compliant Version of SW-259

Description

M/A-COM's MASWSS0162 is a GaAs MMIC SPST switch in a lead-free SOIC-8 lead surface mount plastic package. The MASWSS0162 is ideally suited for use where low power consumption is required. Typical applications include transmit/receive switching, switch matrices and switched filter banks in systems such as radio and cellular equipment, PCM, GPS, fiber optic modules, and other battery powered radio equipment.

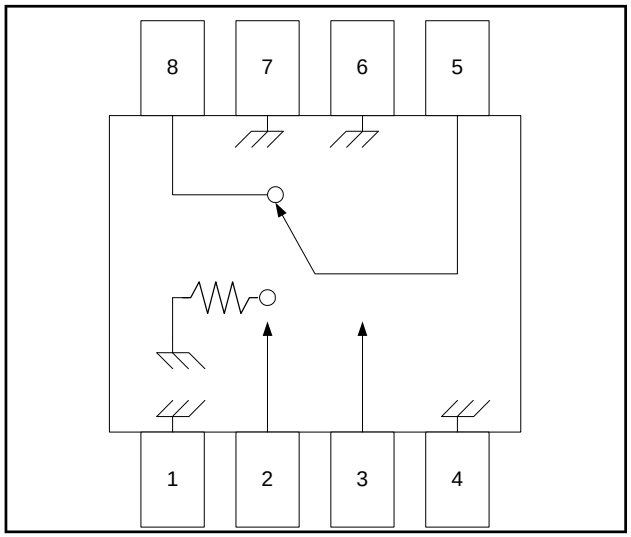
The MASWSS0162 is fabricated using a monolithic GaAs MMIC using a mature 1 micron process. The process features full chip passivation for increased performance and reliability.

Ordering Information[1]

Part Number	Package
MASWSS0162	Bulk Packaging
MASWSS0162TR	1000 piece reel

1. Reference Application Note M513 for reel size information.

Functional Schematic



Pin Configuration

PIN No.	Description	PIN No.	Description
1	Ground	5	RF Port 2
2	A	6	Ground
3	B	7	Ground
4	Ground	8	RF Port 1

Absolute Maximum Ratings [2,4]

Parameter	Absolute Maximum
Input Power [3] 0.05 GHz 0.5 – 2.0 GHz	 +27 dBm +34 dBm
Control Voltage	+5 V, -8.5 V
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. When the RF Input power is applied to a terminated port, the absolute maximum is +32 dBm.
4. M/A-COM does not recommend sustained operation near these survivability limits.

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

- **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

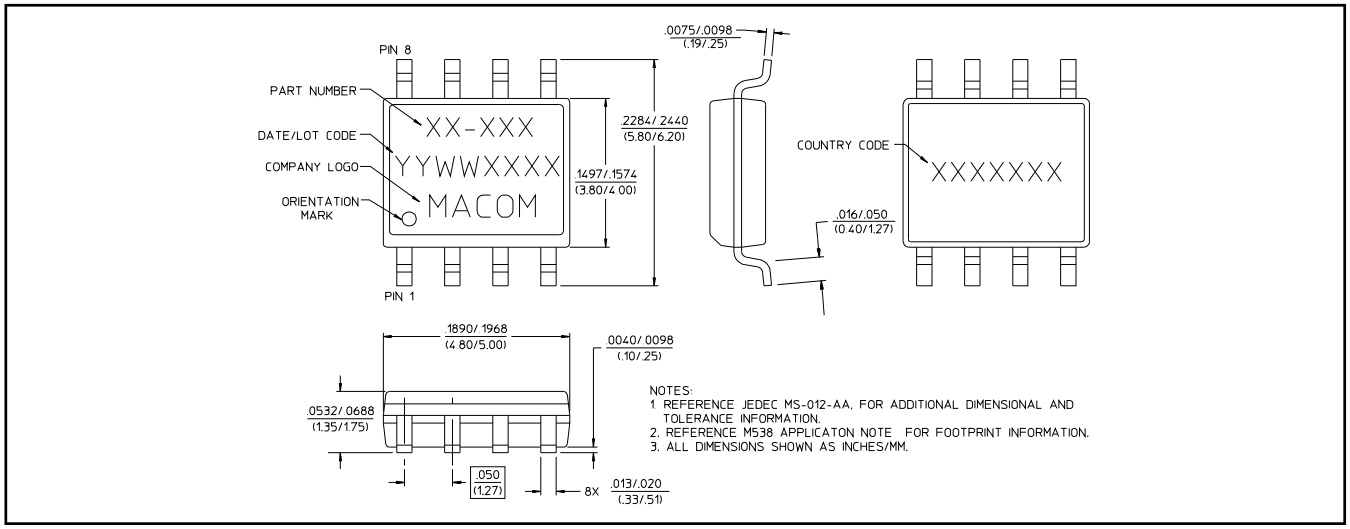
Visit www.macomtech.com for additional data sheets and product information.

Electrical Specifications: T_A = +25°C[5], V_C = -5 V / 0 V, P_{IN} = 0 dBm

Parameter	Test Conditions	Units	Min	Typ[5]	Max
Insertion Loss [6]	DC - 0.5 GHz 0.5 - 1.0 GHz 1.0 - 2.0 GHz	dB dB dB	— — —	0.8 0.9 1.1	— 1.2 —
Isolation [6]	DC - 0.5 GHz 0.5 - 1.0 GHz 1.0 - 2.0 GHz	dB dB dB	— 45 —	65 53 40	— — —
VSWR On VSWR Off	DC - 2.0 GHz DC - 2.0 GHz	Ratio Ratio	— —	1.2:1 1.2:1	— —
1 dB Compression	Input Power 0.05 GHz 0.5 - 2.0 GHz	 dBm dBm	 — —	 18 23	 — —
Trise, Tfall	10% to 90% RF, 90% to 10% RF	nS	—	4	
Ton, Toff	50% Control to 90% RF, Control to 10% RF	nS	—	8	
Transients	In-Band	mV	—	35	
2nd Order Intercept	Measured Relative to Input Power, two-tone up to +5 dBm 0.05 GHz 0.5 - 2.0 GHz	 dBm dBm	 — —	 55 68	 — —
3rd Order Intercept	Measured Relative to Input Power, two-tone up to +5 dBm 0.05 GHz 0.5 - 2.0 GHz	 dBm dBm	 — —	 40 46	 — —
Control Current	—	µA	—	—	25

5. All measurements with 0, -5 V control voltages at 1.0 GHz in a 50 Ω system, unless otherwise specified.
6. Typical values listed are based on average of frequency range noted.

Lead-Free SOIC-8†



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

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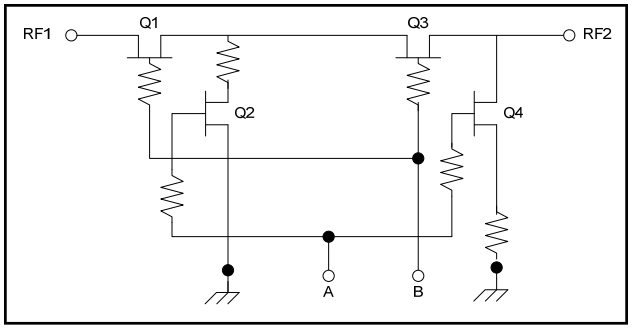
Electrical Schematic



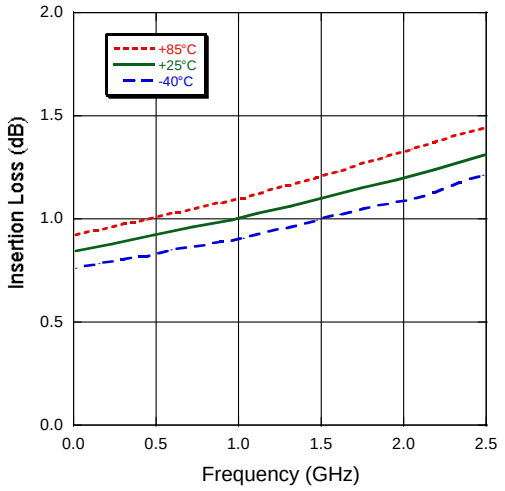
Truth Table [7,8]

Control Inputs		Condition of Switch
A	**B**	**RF State**
1	0	On
0	1	Off

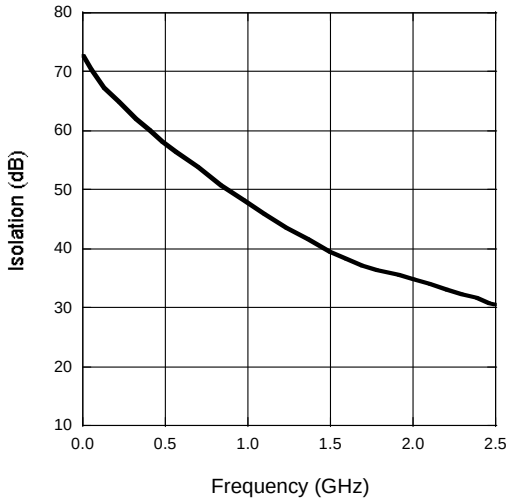
7. "0" = 0 to -0.2 V @ 20 mA max.
8. "1" = -5 V @ 20 mA Typ to –8 V @ 600 mA max.

Typical Performance Curves

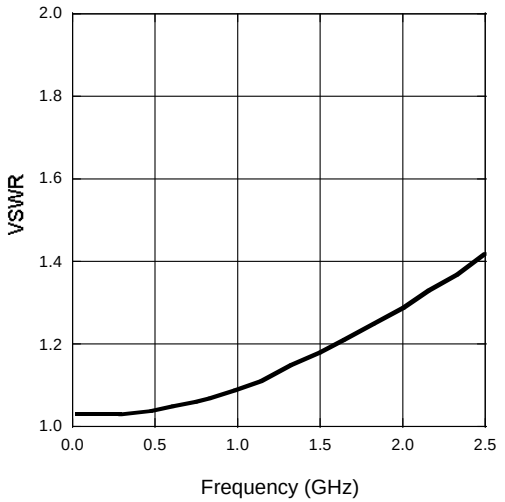
Insertion Loss



Isolation



VSWR



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