

Features

- Very Low Power Consumption: 50 μ W
- 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.

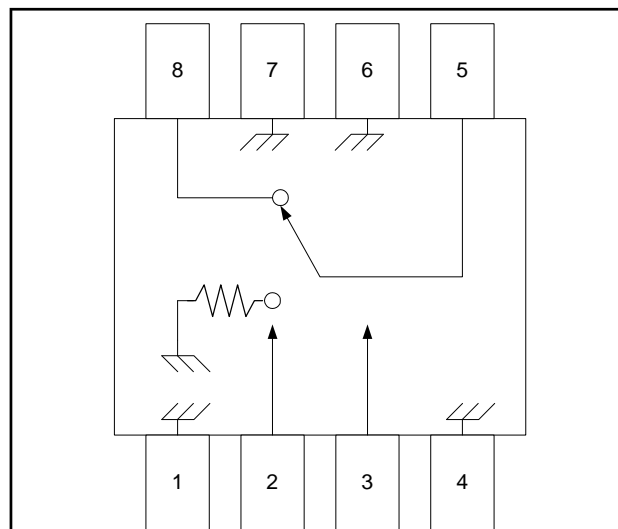
The MASWSS0162 is fabricated using a monolithic GaAs MMIC using a mature 1 micron process. The process features full chip passivation for increased performance and reliability.

Ordering Information¹

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.

GaAs SPST Switch DC - 2.5 GHz

Rev. V3

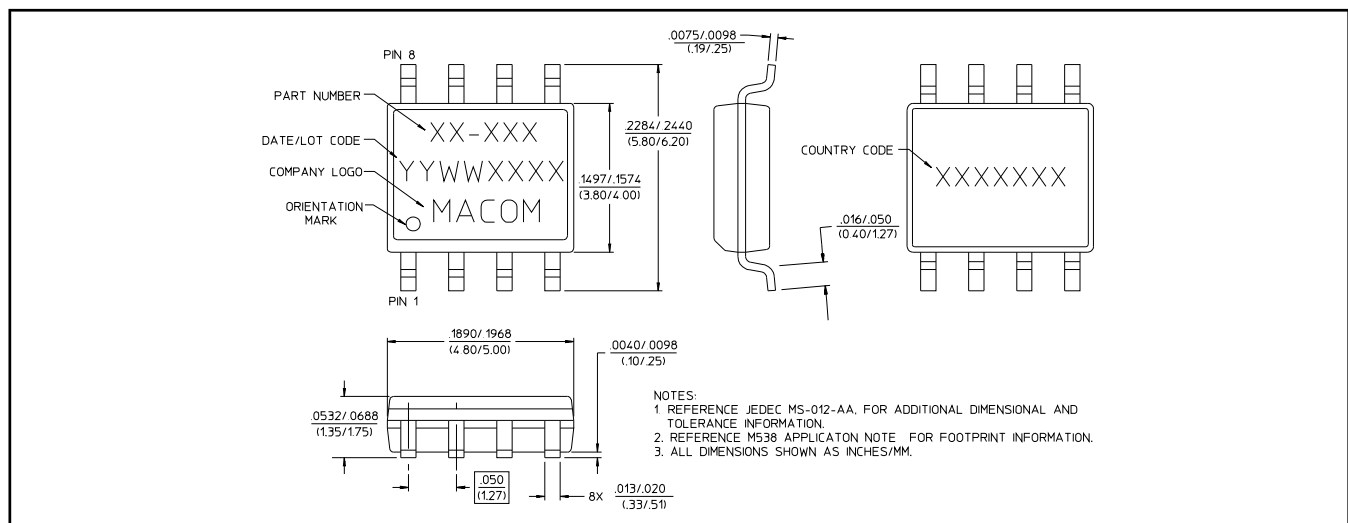
Electrical Specifications: $T_A = +25^\circ\text{C}^5$, $V_C = -5\text{ V} / 0\text{ V}$, $P_{IN} = 0\text{ dBm}$

Parameter	Test Conditions	Units	Min	Typ ⁵	Max
Insertion Loss ⁶	DC - 0.5 GHz	dB	—	0.8	—
	0.5 - 1.0 GHz	dB	—	0.9	1.2
	1.0 - 2.0 GHz	dB	—	1.1	—
Isolation ⁶	DC - 0.5 GHz	dB	—	65	—
	0.5 - 1.0 GHz	dB	45	53	—
	1.0 - 2.0 GHz	dB	—	40	—
VSWR On VSWR Off	DC - 2.0 GHz	Ratio	—	1.2:1	—
	DC - 2.0 GHz	Ratio	—	1.2:1	—
1 dB Compression	Input Power	dBm	—	18	—
	0.05 GHz 0.5 - 2.0 GHz	dBm	—	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	dBm	—	55	—
	0.05 GHz 0.5 - 2.0 GHz	dBm	—	68	—
3rd Order Intercept	Measured Relative to Input Power, two-tone up to +5 dBm	dBm	—	40	—
	0.05 GHz 0.5 - 2.0 GHz	dBm	—	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.

ADVANCED: Data Sheets contain information regarding a product M/A-COM Technology Solutions is considering for development. Performance is based on target specifications, simulated results, and/or prototype measurements. Commitment to develop is not guaranteed.

PRELIMINARY: Data Sheets contain information regarding a product M/A-COM Technology Solutions has under development. Performance is based on engineering tests. Specifications are typical. Mechanical outline has been fixed. Engineering samples and/or test data may be available. Commitment to produce in volume is not guaranteed.

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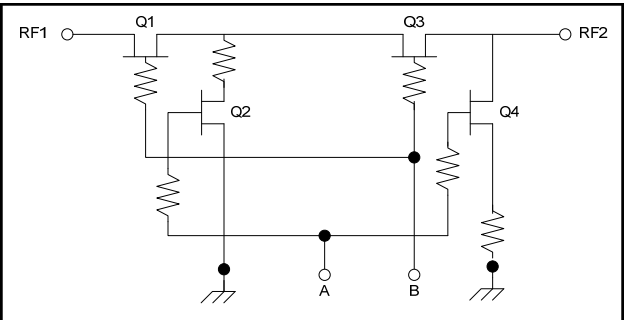
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GaAs SPST Switch DC - 2.5 GHz

Rev. V3

Electrical Schematic



Truth Table ^{7,8}

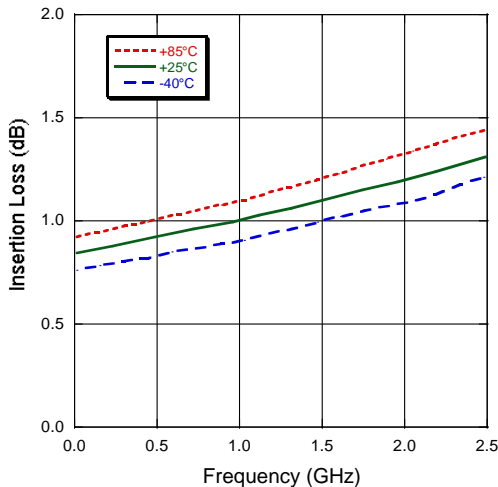
Control Inputs		Condition of Switch
A	B	RF State
1	0	On
0	1	Off

7. "0" = 0 to -0.2 V @ 20 mA max.

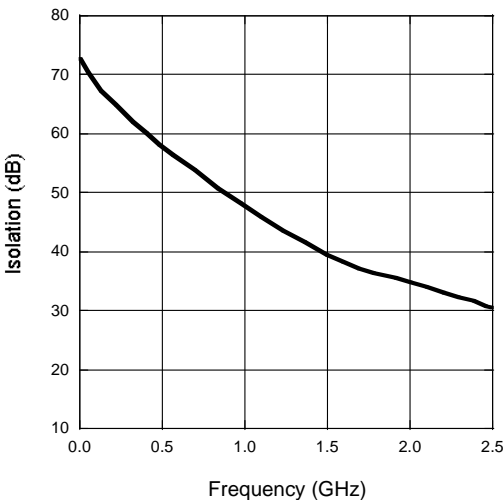
8. "1" = -5 V @ 20 mA Typ to -8 V @ 600 mA max.

Typical Performance Curves

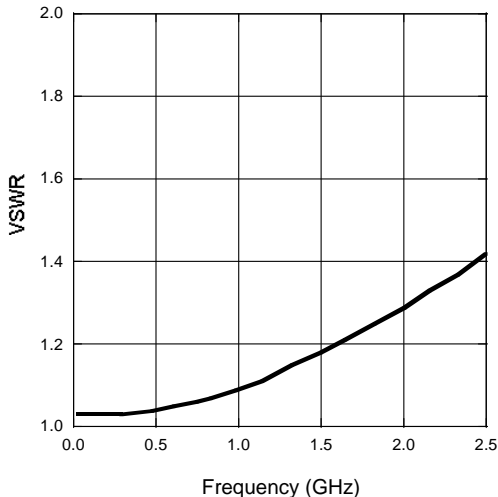
Insertion Loss



Isolation



VSWR



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