tyco Electronics

RoHS Compliant

M/A-COM

GaAs High Isolation Switch DC - 3.0 GHz

MASWSS0169 V2

Features

- Low Power Consumption: < 20 µA @ +3 V
- High Isolation: 50 dB Typical @ 2 GHz
- Low Insertion Loss: 0.7 dB @ 2 GHz
- Positive 2.5 to 5 V Control
- Lead-Free MSOP-10 Package
- 100% Matte Tin Plating over Copper
- Halogen-Free "Green" Mold Compound
- 260°C Reflow Compatible
- RoHS* Compliant Version of SW-439

Description

M/A-COM's MASWSS0169 is a GaAs MMIC SPDT switch in a lead-free MSOP-10 surface mount plastic package. This part is ideal for high isolation, broadband switching requirements. Typical applications include synthesizer switching, transmit/ receive switching, switch matrices and filter banks in systems such as radio and cellular equipment, PCM, GPS, and fiber optic modules.

The MASWSS0169 is fabricated as a monolithic GaAs MMIC using a 0.5 micron PHEMT process. The process features full passivation.

Ordering Information

Part Number	Package
MASWSS0169	Bulk Packaging
MASWSS0169TR-3000	3000 piece reel
MASWSS0169SMB	Sample Board

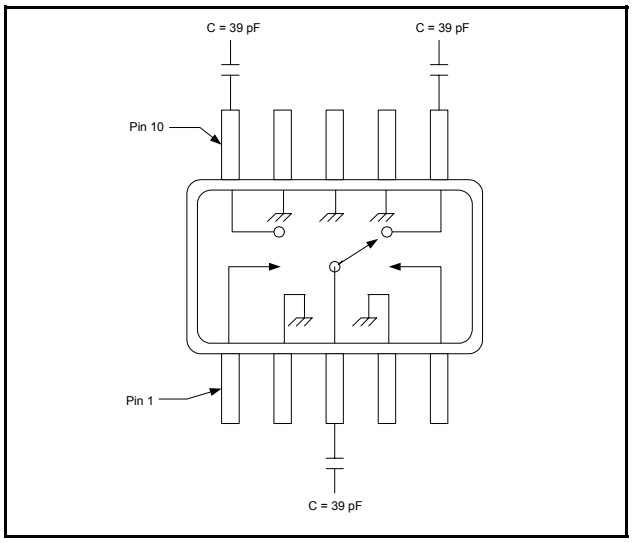
Note: Reference Application Note M513 for reel size information.

Absolute Maximum Ratings [1,2]

Parameter	Absolute Maximum
Input Power	+30 dBm
Operating Voltage	+8.5 Volts
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C

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

Functional Schematic [3]



3. For improved performance at frequencies below 500 MHz, use larger value capacitors.

Pin Configuration

Pin No.	Function	Pin No.	Function
1	Control 1	6	RF Port 2
2	Ground	7	Ground
3	RF Input	8	Ground
4	Ground	9	Ground
5	Control 2	10	RF Port 1

Truth Table [4,5]

Control V1	Control V2	RFC - RF1	RFC - RF2
0	1	Off	On
1	0	On	Off

4. External DC blocking capacitors are required on all RF ports.
5. "0" = 0 ± 0.2 Vdc, "1" = +2.5 to +5 Vdc

* 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.macom.com for additional data sheets and product information.

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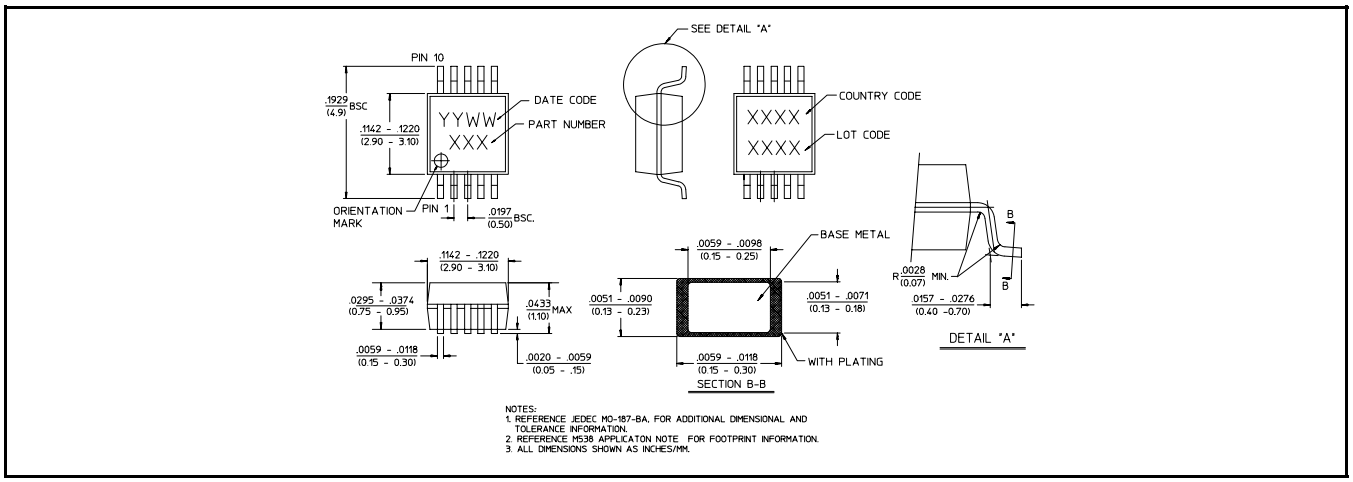
DC - 3.0 GHz

MASWSS0169
V2

Electrical Specifications: T_A = 25°C, V_C = 0 / 3 V, Z_0 = 50Ω

Parameter	Test Conditions	Units	Min	Typ	Max
Insertion Loss	500 MHz - 1.0 GHz 1.0 - 2.0 GHz 2.0 - 3.0 GHz	dB dB dB	— — —	0.55 0.65 0.80	0.65 — —
Isolation	500 MHz - 2.0 GHz 2.0 - 3.0 GHz	dB dB	45 —	47 33	— —
VSWR	0.25 - 3.0 GHz	Ratio	—	1.2:1	—
P1dB	500 MHz - 2.0 GHz, V_C = 3 V	dBm	—	20	—
P1dB	500 MHz - 2.0 GHz, V_C = 5 V	dBm	—	28	—
IP2	2 Tone, 900 MHz, 5 MHz Spacing, V_C = 3 V	dBm	—	85	—
IP3	2 Tone, 900 MHz, 5 MHz Spacing, V_C = 3 V	dBm	—	50	—
Ton, Toff	50% Control to 90% RF, 50% Control to 10% RF	nS	—	20	—
Trise, Tfall	10% to 90% RF, 90% to 10% RF	nS	—	10	—
Transients	In-band	mV	—	15	—
Control Current	$\|V_C\|$ = 3.0 V	µA	—	5	20

Lead-Free MSOP-10†



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

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.

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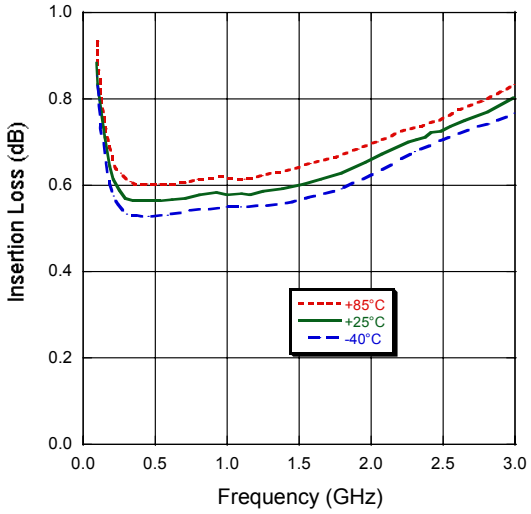
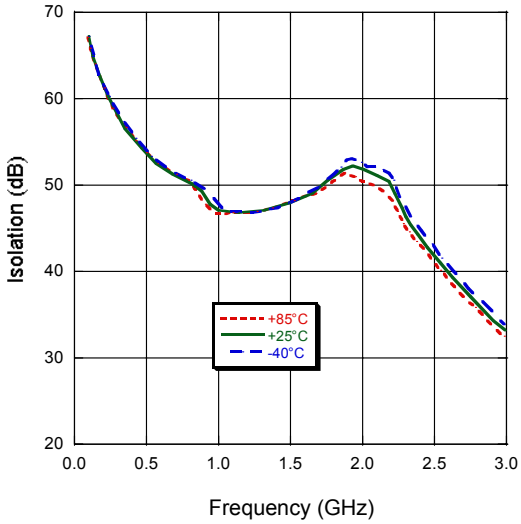
Typical Performance Curves

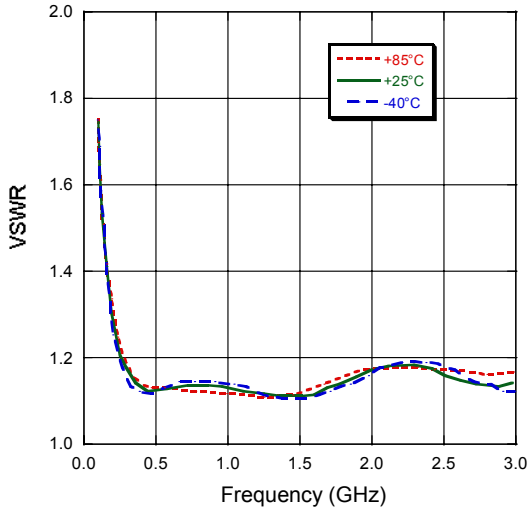
Insertion Loss



Isolation



VSWR



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