GaAs SPDT 2.8 V High Power Switch
DC - 3.0 GHz

MASWSS0029
V2

Features

- Low Voltage Operation: 2.8V
- High IP3: +60 dBm
- Low Insertion Loss: 0.40 dB at 1.0 GHz
- High Isolation: 24.5 dB at 1.0 GHz
- SOT-26 Package
- 0.5 micron GaAs PHEMT Process

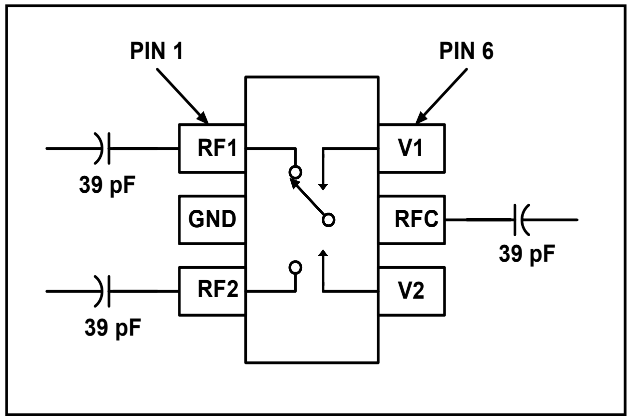
Description

M/A-COM's MASWSS0029 is a GaAs PHEMT MMIC single pole double throw (SPDT) high power switch in a low cost SOT-26 package. The MASWSS0029 is ideally suited for applications where high power, low control voltage, low insertion loss, high isolation, small size and low cost are required.

Typical applications are for CDMA handset systems that connect separate transceiver and/or GPS functions to a common antenna, as well as other related handset and general purpose applications. This part can be used in all systems operating up to 3.0 GHz requiring high power at low control voltage.

The MASWSS0029 is fabricated using a 0.5 micron gate length GaAs PHEMT process. The process features full passivation for performance and reliability.

Functional Schematic



Pin Configuration

Pin No.	Pin Name	Description
1	RF1	RF Port 1
2	GND	RF Ground
3	RF2	RF Port 2
4	V2	Control 2
5	RFC	RF Common Port
6	V1	Control 1

Ordering Information[1]

Part Number	Package
MASWSS0029	Bulk Packaging
MASWSS0029TR	1000 piece reel
MASWSS0029SMB	Sample Test Board

1. Reference Application Note M513 for reel size information.

Absolute Maximum Ratings [2,3]

Parameter	Absolute Maximum
Input Power (0.5 - 3 GHz, 3 V Control)	+35 dBm
Operating Voltage	+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.

- **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

Electrical Specifications: $T_A = 25°C, Z_0 = 50\ \Omega$ [4]

Parameter	Test Conditions	Frequency	Units	Min.	Typ.	Max.
Insertion Loss[5]	V_C = 0 V, 2.8 V	DC – 1 GHz 1 – 2 GHz 2 - 3 GHz	dB dB dB	— — —	0.40 0.50 0.60	0.65 — —
Isolation	V_C = 0 V, 2.8 V	DC – 1 GHz 1 – 2 GHz 2 - 3 GHz	dB dB dB	23 — —	24.5 18.5 13	— — —
Return Loss	V_C = 0 V, 2.8 V	DC – 2 GHz 2 - 3 GHz	dB dB	— —	20 16	— —
IP3	V_C = 0 V, 2.8 V Two Tone, +29 dBm Total Pin, 1 MHz Spacing	0.05 - 3 GHz	dBm	—	60	—
P0.1dB	V_C = 0 V, 3 V	—	dBm	—	34	—
Trise, Tfall	10% to 90% RF, 90% to 10% RF	—	nS	—	200	—
Ton, Toff	50% control to 90% RF, and 50% control to 10% RF	—	nS	—	250	—
Transients	In Band	—	mV	—	14	—
Gate Leakage	V_C = 2.8 V	—	uA	—	—	60

4. External DC blocking capacitors are required on all RF ports.
5. Insertion Loss can be optimized by varying the DC blocking capacitor value, e.g. 1000 pF for 100 - 500 MHz, 39 pF for 0.5 - 3.0 GHz.

Truth Table

V1	V2	ANT– RF1	ANT - RF2
+2.8 V	0 V	On	Off
0 V	+2.8 V	Off	On

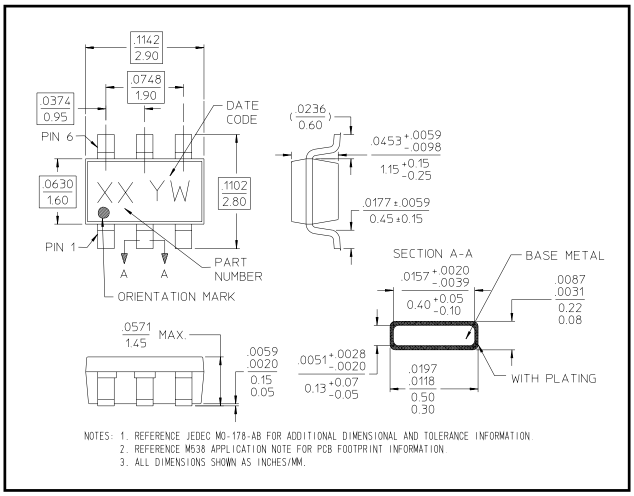
Handling Procedures

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.

SOT-26 Plastic Package†



†Meets JEDEC moisture sensitivity level 1 requirements

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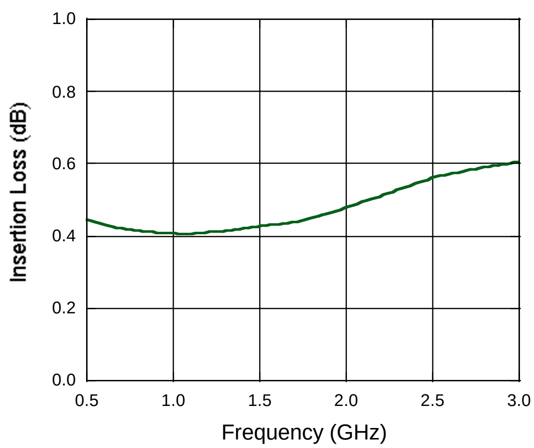
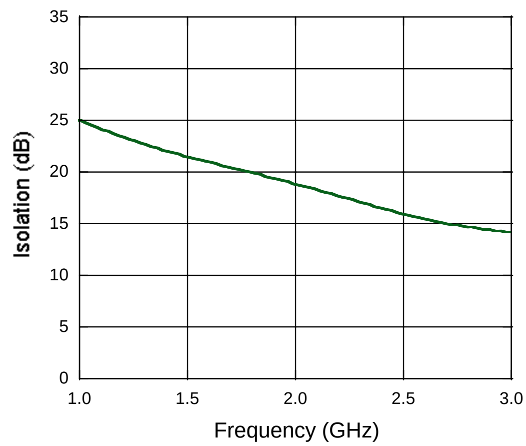
Typical Performance Curves

Insertion Loss vs. Frequency, 25°C, 39 pF



Isolation vs. Frequency, 25°C, 39 pF



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