GaAs SP3T 2.5 V Switch
DC - 3.0 GHz

MASWSS0028
V2

Features

- Low Voltage Operation: 2.5V
- Low Insertion Loss: 0.3 dB at 1 GHz
- 2mm 8-Lead PQFN Package
- 0.5 micron GaAs PHEMT Process

Description

M/A-COM's MASWSS0028 is a GaAs PHEMT MMIC single pole three throw (SP3T) switch in a low cost 2mm 8-Lead PQFN package. The MASWSS0028 is ideally suited for applications where low control voltage, low insertion loss, high isolation, small size and low cost are required.

Typical applications are for filter and antenna switching in handset systems that connect separate receive 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 GHz requiring low control voltage.

The MASWSS0028 is fabricated using a 0.5 micron gate length GaAs PHEMT process. The process features full passivation for performance and reliability.

Ordering Information[1]

Part Number	Package
MASWSS0028	Bulk Packaging
MASWSS0028TR	1000 piece reel
MASWSS0028TR-3000	3000 piece reel
MASWSS0028SMB	Sample Board

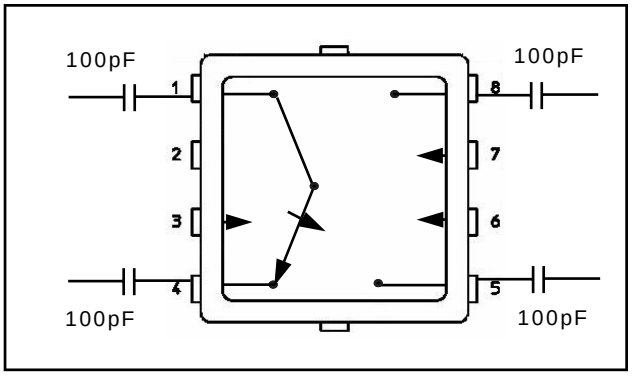
1. Reference Application Note M513 for reel size information.

Truth Table [2]

V1	V2	V3	RFC - RF1	RFC - RF2	RFC - RF3
0	1	0	On	Off	Off
1	0	0	Off	On	Off
0	0	1	Off	Off	On

2. 0 = 0 V ± 0.2 V, 1 = +2.5 V to +5 V.

Functional Schematic



Pin Configuration

Pin No.	Function	Description
1	RFC	RF In/Out
2	GND	RF Ground
3	V1	Control 1
4	RF1	RF In/Out
5	RF2	RF In/Out
6	V2	Control 2
7	V3	Control 3
8	RF3	RF In/Out

Absolute Maximum Ratings [3,4]

Parameter	Absolute Maximum
Max Input Power (0.5 - 3 GHz, 2.5V Control)	+32 dBm
Voltage	±8.5 volts
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C

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

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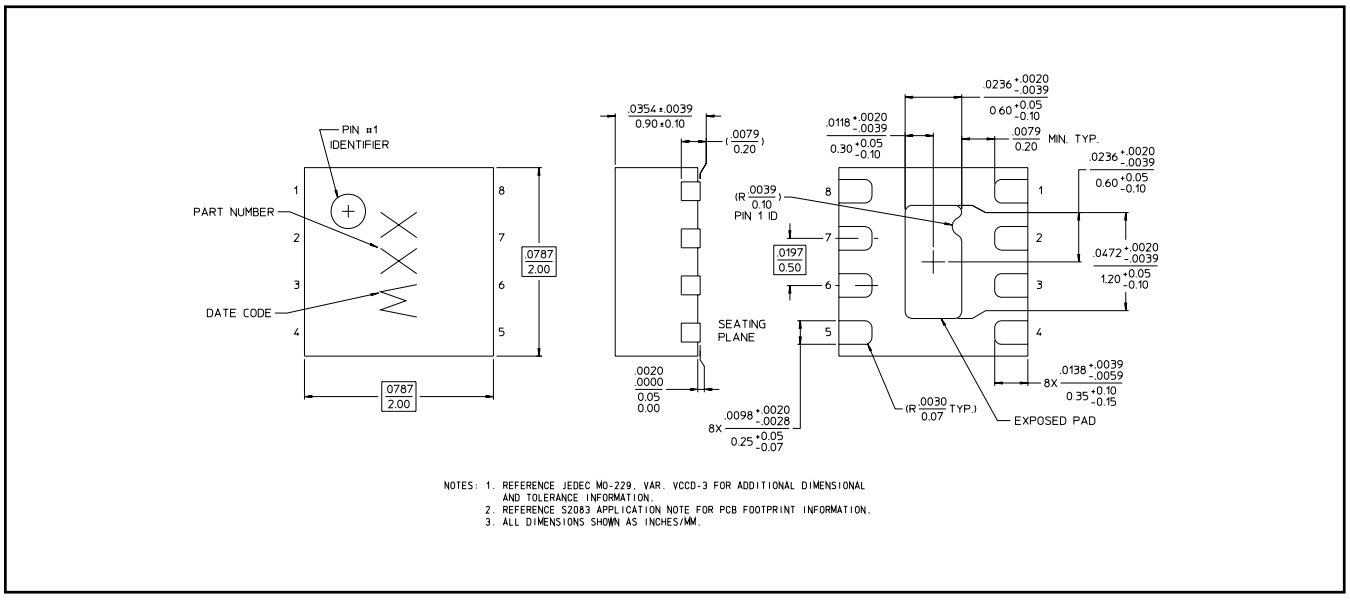
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Electrical Specifications: T_A = 25°C, V_C = 0 V / 2.5 V, Z_0 = 50 Ω [5]

Parameter	Test Conditions	Units	Min.	Typ.	Max.
Insertion Loss [6]	DC - 1 GHz 1 - 2 GHz 2 - 3 GHz	dB dB dB	— — —	0.3 0.5 0.75	0.4 0.6 1.0
Isolation	DC - 1 GHz 1 - 2 GHz 2 - 3 GHz	dB dB dB	19 13 10	24 18 14	— — —
Return Loss	DC - 2.5 GHz 2.5 - 3 GHz	dB dB	— —	25 20	— —
IP3	Two Tone, +0 dBm/tone, 1 MHz Spacing, > 50 MHz	dBm	—	50	—
P1dB	—	dBm	—	21	—
Trise, Tfall	10% to 90% RF, 90% to 10% RF	nS	—	13	—
Ton, Toff	50% control to 90% RF and 50% control to 10% RF	nS	—	15	—
Transients	In Band	mV	—	30	—
Control Current	$\|V_C\|$ = 2.5V	µA	—	1	10

5. External DC blocking capacitors are required on all RF ports.
6. Insertion loss can be optimized by varying the DC blocking capacitor value, e.g. 100 pF for 100 - 500 MHz, 39 pF for 0.5 - 3 GHz.

2mm 8-Lead PQFN†



†Meets JEDEC moisture sensitivity level 1 requirements.

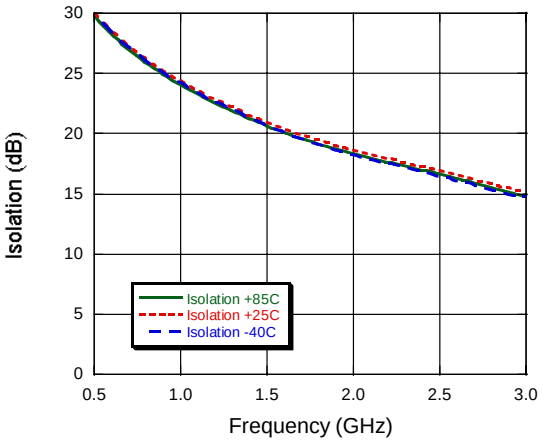
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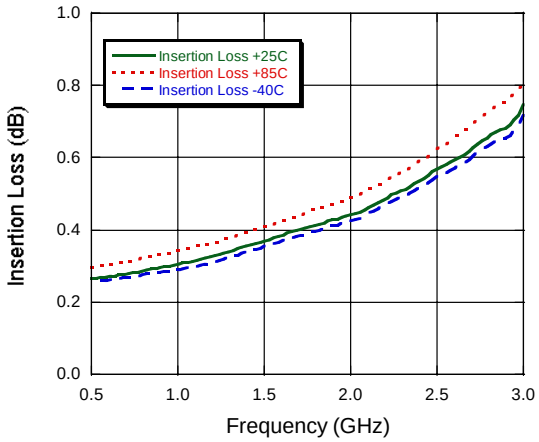
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Typical Performance Curves vs. Frequency and Temperature

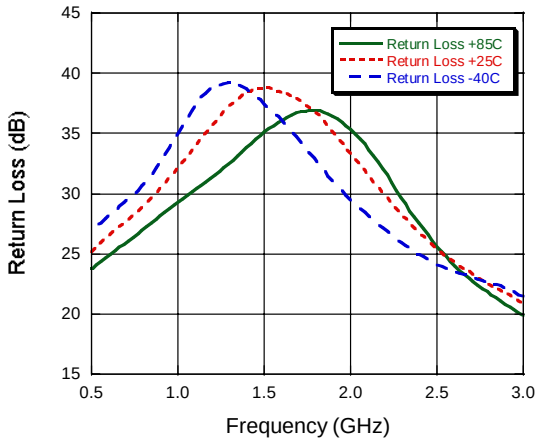
Isolation



Insertion Loss



Return Loss



Qualification

Qualified to M/A-COM specification REL-201, Process Flow –2.

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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