

RoHS Compliant



MASW-007588 V1

GaAs Broadband SPDT Switch DC - 6.0 GHz

Features

- UNII, Hiperlan, and 802.11a+b/g Applications
- Broadband Performance: DC-6 GHz
- Low Insertion Loss: 0.9 dB at 6 GHz
- High Isolation: 28 dB Typical
- Fast Switching Speed: 0.5 μm GaAs PHEMT
- High Power: 36 dBm P1dB
- Fast Settling for Low Gate Lag Requirements
- Lead-Free 3 mm 12-lead PQFN Package
- 100% Matte Tin Plating over Copper
- Halogen-Free "Green" Mold Compound
- RoHS* Compliant and 260°C Reflow Compatible

Description

M/A-COM's MASW-007588 is a broadband GaAs PHEMT MMIC SPDT switch in a low cost, lead-free 3 mm 12-lead PQFN package. The MASW-007588 is ideally suited for applications where very small size and low cost are required.

The MASW-007588, with its small size and low height, is ideal for 802.11a and 802.11b/g PC card and access point applications.

The MASW-007588 delivers high isolation, low insertion loss and high linearity up to 6 GHz.

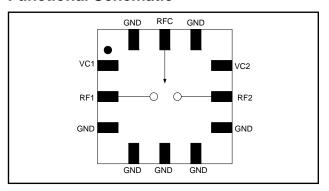
The MASW-007588 is fabricated using a 0.5 micron gate length GaAs PHEMT process. The process features full passivation for performance and reliability.

Ordering Information¹

Part Number	Package
MASW-007588-TR3000	3000 piece reel
MASW-007588-000SMB	Sample Test Board (Includes 5 Samples)

1. Reference Application Note M513 for reel size information.

Functional Schematic



Pin Configuration

PIN No.	PIN Name	Description	
1	VC1	Control 1	
2	RF1	RF Port 1	
3	GND	Ground	
4	GND	Ground	
5	GND	Ground	
6	GND	Ground	
7	GND	Ground	
8	RF2	RF Port 2	
9	VC2	Control 2	
10	GND	Ground	
11	RFC	RF Input	
12	GND	Ground	
13	Paddle ²	RF and DC Ground	

^{2.} The exposed pad centered on the package bottom must be connected to RF and DC ground.

Absolute Maximum Ratings 3,4

Parameter	Absolute Maximum		
Input Power @ 3 V Control	+37 dBm		
Input Power @ 5 V Control	+39 dBm		
Operating Voltage	+8.5 volts		
Operating Temperature	-40°C to +85°C		
Storage Temperature	-65°C to +150°C		

- Exceeding any one or combination of these limits may cause permanent damage to this device.
- 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

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



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Electrical Specifications⁵: $T_A = 25$ °C, $Z_0 = 50\Omega$, Vc = 0 V/3 V, Pin = 0 dBm

Parameter	Test Conditions	Units	Min.	Тур.	Max.
Insertion Loss	2.4 GHz 5.3 GHz 5.8 GHz	dB dB dB	_ _ _	0.70 0.85 0.85	1.05 1.2 1.2
Isolation	2.4 GHz 5.3 GHz 5.8 GHz	dB dB dB	24 23 21	29 28 26	
Return Loss	DC - 6 GHz	dB	_	20	_
IP2	Two Tone, +15 dBm/Tone, 5 MHz Spacing, >50 MHz 2.4 GHz, Vc = 3.0 V 5.8 GHz, Vc = 3.0 V 2.4 GHz, Vc = 5.0 V 5.8 GHz, Vc = 5.0 V	dBm dBm dBm dBm	_ _ _ _	98 81 107 87	_ _ _
IIP3	Two Tone, +15 dBm/Tone, 5 MHz Spacing, >50 MHz 2.4 GHz, Vc = 3.0 V 5.8 GHz, Vc = 3.0 V 2.4 GHz, Vc = 5.0 V 5.8 GHz, Vc = 5.0 V	dBm dBm dBm dBm	_ _ _ _	57 53 57 54	_ _ _
Input P-1dB	2.4 GHz 5.3 GHz 5.8 GHz	dBm dBm dBm		40 36 37	
2nd Harmonic	2.4 GHz, Pin = +20 dBm 5.8 GHz, Pin = +20 dBm	dBm dBm	_	-72 -69	_
3rd Harmonic	2.4 GHz, Pin = +20 dBm 5.8 GHz, Pin = +20 dBm	dBm dBm	_	-85 -75	_
T-rise, T-fall	10% to 90% RF and 90% to 10% RF	nS	_	55	_
Ton, Toff	50% control to 90% RF, and 50% control to 10% RF	nS	_	80	_
Transients	_	mV	_	14	_
Control Current	Vc = 3 V	μA	_	15	25

Truth Table 5,6,7

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

- For positive voltage control, external DC blocking capacitors are required on all RF ports.
- 6. Differential voltage, V(state 1) V(state 0), must be +2.7 V minimum and must not exceed +5 V.
- 7. $0 = 0 \pm 0.2 \text{ V}$, 1 = +2.9 V to +5 V.

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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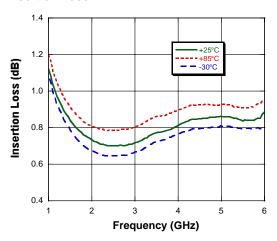


MASW-007588

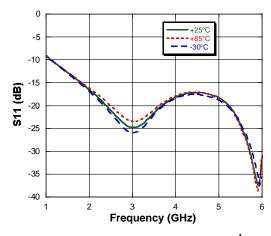
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Typical Performance Curves

Insertion Loss

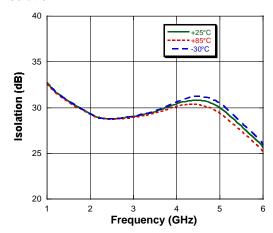


Return Loss

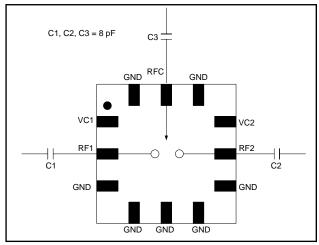


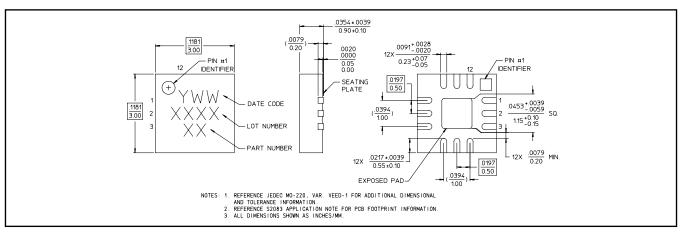
Lead-Free 3 mm 12-lead PQFN[†]

Isolation



Application Schematic





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

M/A-COM Inc. and its affiliates reserve the right to make changes to the

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