

## Features

- 802.11b/g and Bluetooth Applications
- Low Insertion Loss:  
0.65 dB 2.4 GHz to 2.5 GHz band
- High  $R_x$  Isolation: 23 dB typical
- High  $R_x$  Gain: 12 dB
- Lead-Free 2 mm 12-Lead STQFN with 0.4 mm lead pitch package
- Halogen-Free "Green" Mold Compound
- RoHS\* Compliant and 260°C Reflow Compatible

## Description

M/A-COM's MAMF-010014 is a single band GaAs pHEMT MMIC SP3T switch with an integrated LNA with bypass mode in the  $R_x$  path. Typical applications are for single band 2.4 GHz WLAN (802.11 b/g) and Bluetooth applications.

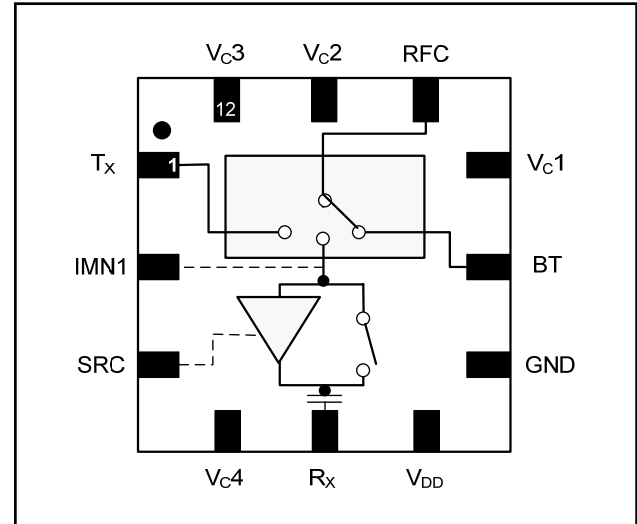
The MAMF-010014 delivers high isolation, low insertion loss, low noise and high linearity at 2.4 - 2.5 GHz. The MAMF-010014 is fabricated using a 0.5 micron gate length GaAs pHEMT process. The process features full passivation for performance and reliability.

## Ordering Information<sup>1,2</sup>

Part Number	Package
MAMF-010014-TR3000	3000 piece reel
MAMF-010014-001SMB	Sample Board

1. Reference Application Note M513 for reel size information.
2. All sample boards include 5 loose parts.

## Functional Schematic



## Pin Configuration<sup>3</sup>

Pin No.	Function	Description
1	$T_x$	$T_x$ Port
2	IMN1	LNA Input Match Port 1
3	SRC	Source Bypass Capacitor
4	$V_{C4}$	Voltage Control 4
5	$R_x$	$R_x$ Port
6	$V_{DD}$	Bias Voltage
7	GND	Ground
8	BT	Blue Tooth $T_x/R_x$ Port
9	$V_{C1}$	Voltage Control 1
10	RFC	RF Common
11	$V_{C2}$	Voltage Control 2
12	$V_{C3}$	Voltage Control 3
13	GND (paddle)	Ground

3. The exposed pad centered on the package bottom must be connected to the RF and DC ground.

\* Restrictions on Hazardous Substances, European Union Directive 2002/95/EC.

**Electrical Specifications<sup>2</sup>: Freq. = 2.4 - 2.5 GHz, V<sub>CC</sub> = 3.3V**

Parameter	Test Conditions	Units	Min.	Typ.	Max.
Insertion Loss	RFC to T <sub>x</sub> , RFC to BT	dB	—	0.65	—
Bypass Mode Insertion Loss	RFC to R <sub>x</sub>	dB	—	5.0	—
Input/Output Return Loss	RFC to T <sub>x</sub> , RFC to BT	dB	—	20	—
Isolation	RFC to T <sub>x</sub> , RFC to BT RFC to R <sub>x</sub>	dB dB	— —	25 23	— —
LNA On Gain	RFC to R <sub>x</sub>	dB	—	12	—
LNA On Input/Output Return Loss	RFC to R <sub>x</sub>	dB	—	10	—
Noise Figure	—	dB	—	1.9	—
IIP3	—	dBm	—	7	—
IP1dB	RFC to T <sub>x</sub> , RFC to BT LNA on Bypass path	dBm	—	32 -3.5 23.5	—
Quiescent Current	No RF, LNA On, V <sub>CC</sub> = 3.3 V	mA	—	8	—
Leakage Current	All States except High Gain	μA	—	10	—

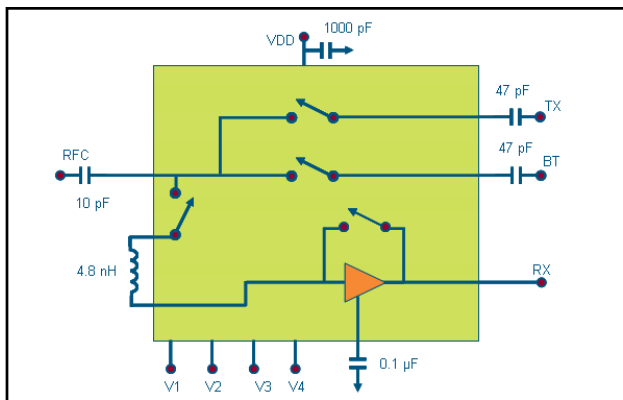
2. External blocking capacitors on RFC, T<sub>x</sub> and BT ports.

**Truth Table<sup>3,4,5</sup>**

Control V1	Control V2	Control V3	Control V4	V <sub>DD</sub>	RFC-R <sub>x</sub>		RFC-BT	RFC-T <sub>x</sub>
					High Gain	Bypass		
Hi	Low	Low	Low	Hi	Off	Off	On	Off
Low	Hi	Low	Hi	Hi	On	Off	Off	Off
Low	Hi	Low	Low	Hi	Off	On	Off	Off
Low	Low	Hi	Low	Hi	Off	Off	Off	On

3. For positive voltage control, external DC blocking capacitors are required on RFC, T<sub>x</sub> and BT ports.
4. Differential voltage, V(state Low) - V(state Hi), must be +2.7 V minimum and must not exceed 4 V.
5. Low = 0 ± 0.1 V, Hi = V<sub>DD</sub> ± 0.4 V.

**Functional Schematic**



**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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  - **Europe** Tel: 44.1908.574.200 / Fax: 44.1908.574.300
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