

Advance Information

The MRFIC Line

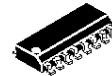
2.4 GHz Upmixer

Designed primarily for use in Industrial, Scientific, Medical (ISM) frequency band applications, the MRFIC2406 is an active GaAs upmixer in a low-cost SOIC 16-lead, surface mount package. The integrated circuit has internal active Baluns and requires minimal off-chip matching. In STANDBY mode, the device draws less than 0.6 mA for low battery drain.

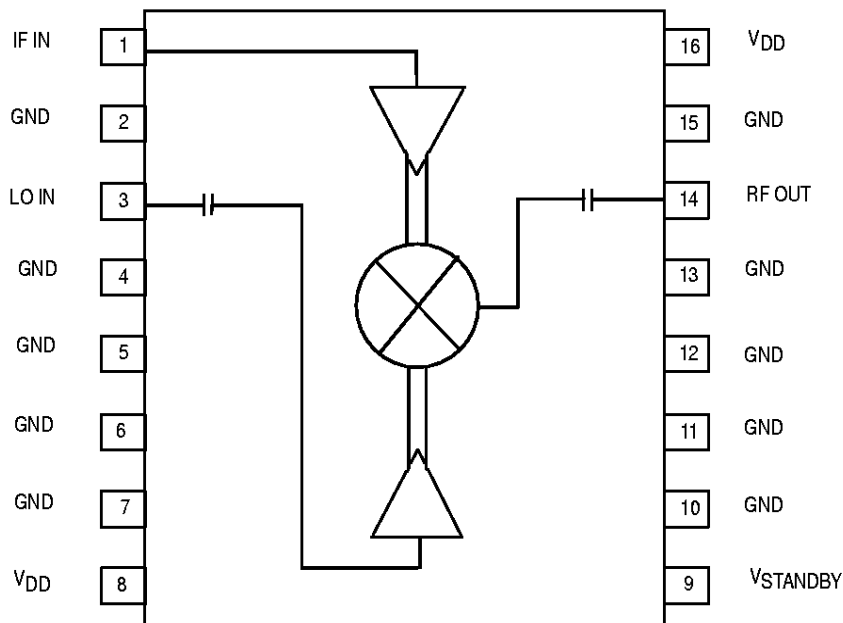
- Usable Frequency Range = 2 to 3 GHz
- Single Voltage Supply = 3 to 5 Volts
- Low Current Drain = 15 mA Max Supply Current
- IF to RF Conversion Gain = 6 dB Typical
- STANDBY Mode for Low Current Consumption
- No External Baluns Required
- Simple Off-Chip Matching for Maximum Flexibility
- Order MRFIC2406R2 for Tape and Reel.
R2 Suffix = 2,500 Units per 16 mm, 13 inch Reel.
- Device Marking = M2406

MRFIC2406

2.4 GHz
INTEGRATED UPMIXER
GaAs MONOLITHIC
INTEGRATED CIRCUIT



CASE 751B-05
(SO-16)



Pin Connections and Functional Block Diagram

MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Rating	Symbol	Limit	Unit
Supply Voltage	V_{DD}	7	Vdc
Standby Voltage	$V_{STANDBY}$	7	Vdc
IF Input Power	IF IN	+10	dBm
LO Input Power	LO IN	+10	dBm
Storage Temperature Range	T_{stg}	-65 to +125	$^\circ\text{C}$
Ambient Operating Temperature	T_A	-35 to +85	$^\circ\text{C}$

RECOMMENDED OPERATING RANGES

Parameter	Symbol	Value	Unit
RF Frequency	f_{RF}	2.4 to 2.5	GHz
IF Frequency	f_{IF}	100 to 370	MHz
LO Frequency	f_{LO}	2.03 to 2.4	GHz
Supply Voltage	V_{DD}	3 to 5	Vdc
Standby Voltage	$V_{STANDBY}$	0 to 3	Vdc

ELECTRICAL CHARACTERISTICS ($V_{DD} = 3\text{ V}$, $T_A = 25^\circ\text{C}$, $f_{RF} = 2.45\text{ GHz}$, $f_{IF} = 237\text{ MHz}$, IF IN = -15 dBm, $f_{LO} = 2.213\text{ GHz}$, LO IN = -5 dBm, $V_{STANDBY} = 0\text{ V}$, Tested in Circuit Shown in Figure 1)

Characteristic	Min	Typ	Max	Unit
IF to RF Conversion Gain	4	6	—	dB
LO to RF Isolation	10	12	—	dB
Return Loss, All Ports, (Matching as shown in Figure 1)	-10	-12	—	dB
Spurious Output @ 2.4–2.5 GHz	—	—	-55	dBc
Output 1dB Gain Compression	—	-10	—	dBm
ON State Current, ($V_{STANDBY} = 0\text{ V}$)	—	—	15	mA
OFF State Current, ($V_{STANDBY} = 3\text{ V}$)	—	—	0.6	mA
$V_{STANDBY}$ Voltage (ON State)	—	—	0.1	V
$V_{STANDBY}$ Voltage (STANDBY State)	2.8	—	—	V
On/Off Switching Time	—	1	—	μsec

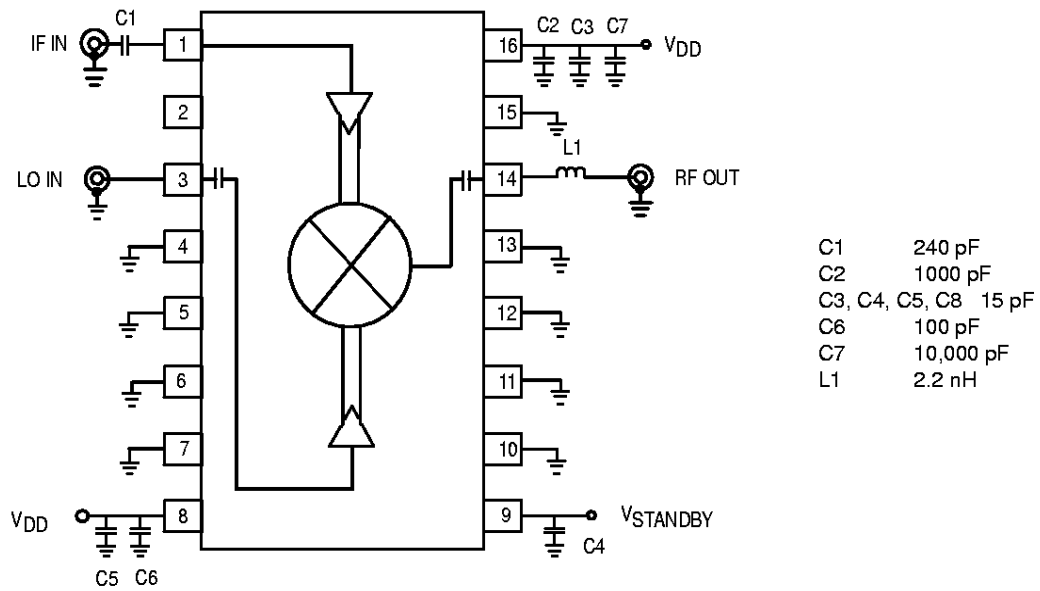
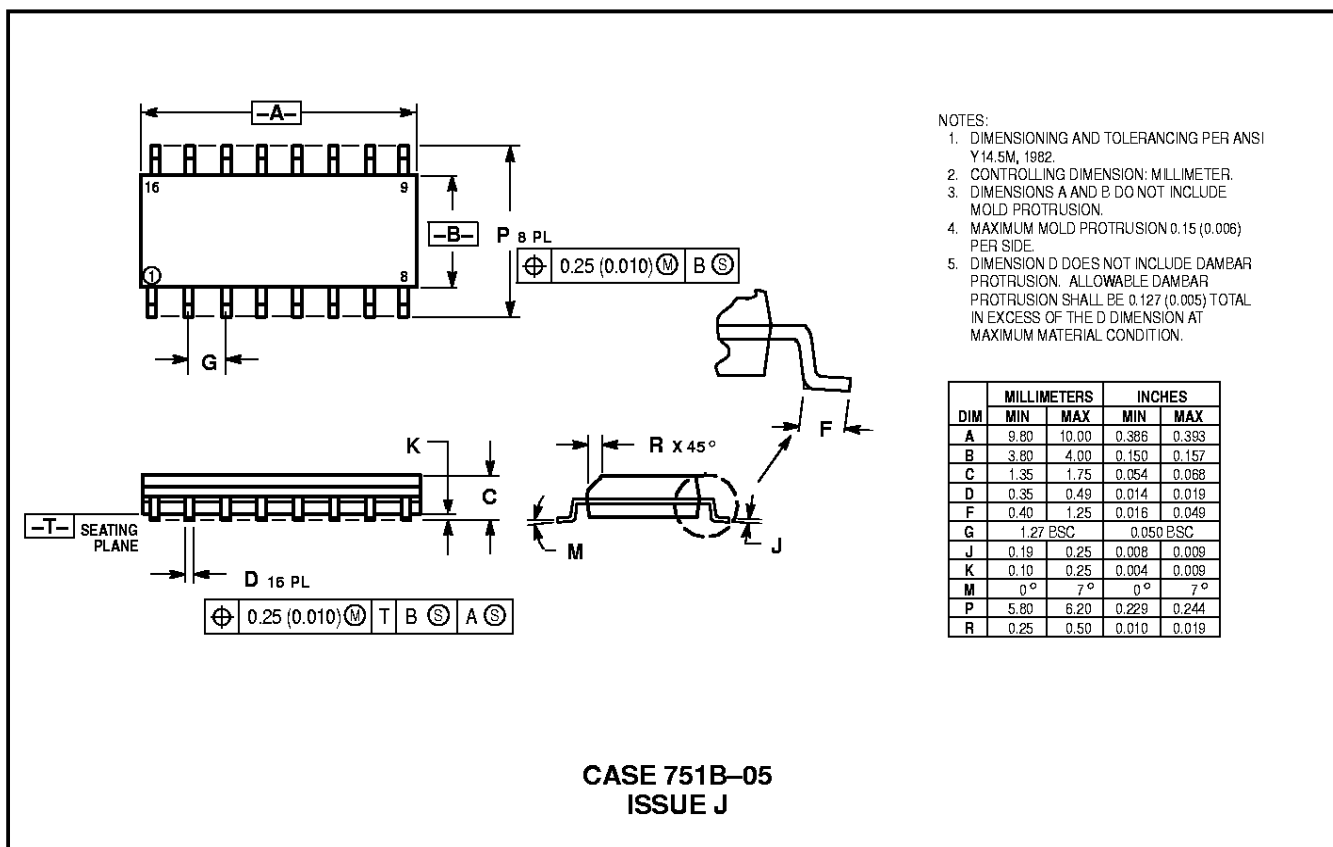


Figure 1. 2.45 GHz Applications Circuit Configuration

PACKAGE DIMENSIONS



Motorola reserves the right to make changes without further notice to any products herein. Motorola makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does Motorola assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation consequential or incidental damages. "Typical" parameters which may be provided in Motorola data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. Motorola does not convey any license under its patent rights nor the rights of others. Motorola products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the Motorola product could create a situation where personal injury or death may occur. Should Buyer purchase or use Motorola products for any such unintended or unauthorized application, Buyer shall indemnify and hold Motorola and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that Motorola was negligent regarding the design or manufacture of the part. Motorola and are registered trademarks of Motorola, Inc. Motorola, Inc. is an Equal Opportunity/Affirmative Action Employer.

Mfax is a trademark of Motorola, Inc.

How to reach us:

USA/EUROPE/ Locations Not Listed: Motorola Literature Distribution;
P.O. Box 5405, Denver, Colorado 80217. 1-303-675-2140 or 1-800-441-2447

JAPAN: Nippon Motorola Ltd.: SPD, Strategic Planning Office, 4-32-1,
Nishi-Gotanda, Shinagawa-ku, Tokyo 141, Japan. 81-3-5487-8488

Customer Focus Center: 1-800-521-6274

Mfax™: RMFAX0@email.sps.mot.com – TOUCHTONE 1-602-244-6609
Motorola Fax Back System – US & Canada ONLY 1-800-774-1848
– http://sps.motorola.com/mfax/

ASIA/PACIFIC: Motorola Semiconductors H.K. Ltd.; 8B Tai Ping Industrial Park,
51 Ting Kok Road, Tai Po, N.T., Hong Kong. 852-26629298

HOME PAGE: http://motorola.com/sps/

