

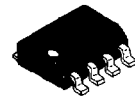
Advance Information
The MRFIC Line
Balanced Transmit Mixer

MRFIC0931

**BALANCED TRANSMIT
MIXER SILICON
MONOLITHIC
INTEGRATED CIRCUIT**

The MRFIC0931 is a balanced Gilbert cell mixer with LO buffer amplifier intended for transmit upmixer application. The device is usable for Industrial, Scientific and Medical (ISM), Cellular and PCS applications and is packaged in a low-cost surface mount package.

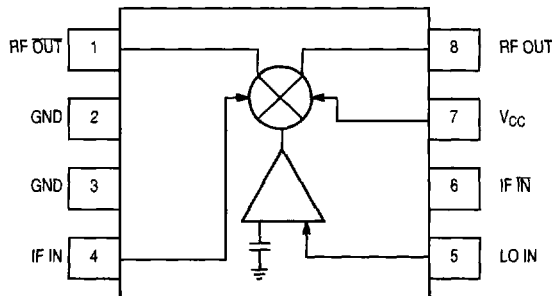
- Usable 500–2000 MHz
- High Output Power @ 1 dB Gain Compression, 3.6 Volts
0.9 dBm (Typ) @ 900 MHz
–2 dBm (Typ) @ 1800 MHz
- 2.7–4.8 Volts Operation
- Balanced Design for Good LO Rejection
- 47 mA (Max) Current @ 4.5 Volts
45 mA (Max) Current @ 3.6 Volts
- Low Cost Surface Mount Package
- Order MRFIC0931R2 for Tape and Reel.
R2 suffix = 2,500 Units per 12 mm, 13 inch Reel.
- Device Marking = M0931



**CASE 751-06
(SO-8)**

ABSOLUTE MAXIMUM RATINGS

Ratings	Symbol	Value	Unit
Supply Voltage	V_{CC}	5	Vdc
Input Power, IF and LO	$P_{IF, P_{LO}}$	+10	dBm
Operating Ambient Temperature	T_A	–35 to +85	°C
Storage Temperature	T_{stg}	–65 to +150	°C



Pin Connections and Functional Block Diagram

RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Value	Unit
Supply Voltages	V_{CC}	2.7 to 4.5	Vdc
RF Frequency Range	f_{RF}	500 to 2000	MHz
IF Frequency Range	f_{IF}	0 to 250	MHz

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$, measured in circuit shown in Figure 1 or 2 as frequency indicates)

Parameter	Min	Typ	Max	Unit
RF Output Power ($f_{IF} = 88\text{ MHz}$, $f_{LO} = 815\text{ MHz}$, $P_{LO} = -10\text{ dBm}$, $P_{IF} = -20\text{ dBm}$, $V_{CC} = 4.5\text{ V}$)	2	4	8	dBm
LO Feed Through ($f_{IF} = 88\text{ MHz}$, $f_{LO} = 815\text{ MHz}$, $P_{LO} = -10\text{ dBm}$, $P_{IF} = -20\text{ dBm}$, $V_{CC} = 4.5\text{ V}$)	—	—	-16	dBc
Undesired Sideband Output ($f_{IF} = 88\text{ MHz}$, $f_{LO} = 815\text{ MHz}$, $P_{LO} = -10\text{ dBm}$, $P_{IF} = -20\text{ dBm}$, $V_{CC} = 4.5\text{ V}$)	—	—	-25	dBc
Small Sigal Conversion Gain ($f_{IF} = 100\text{ MHz}$, $P_{IF} = -25\text{ dBm}$, $V_{CC} = 3.6\text{ V}$)	—	25	—	dB
900 MHz ($P_{LO} = -10\text{ dBm}$)	—	20	—	dB
1800 MHz ($P_{LO} = -5\text{ dBm}$)	—	—	—	—
Power Output at 1 dB Gain Compression ($f_{IF} = 100\text{ MHz}$, $P_{IF} = -25\text{ dBm}$, $V_{CC} = 3.6\text{ V}$)	—	0.9	—	dBm
900 MHz ($P_{LO} = -10\text{ dBm}$)	—	-2	—	dBm
1800 MHz ($P_{LO} = -5\text{ dBm}$)	—	—	—	—
Supply Current	—	38	47	mA
$V_{CC} = 4.5\text{ V}$	—	30	45	mA
$V_{CC} = 3.6\text{ V}$	—	—	—	—

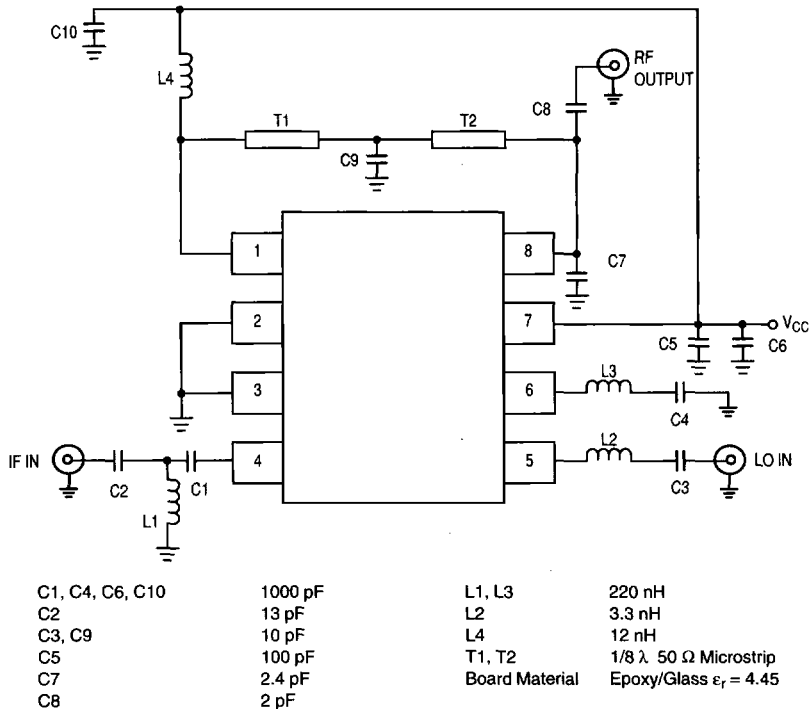
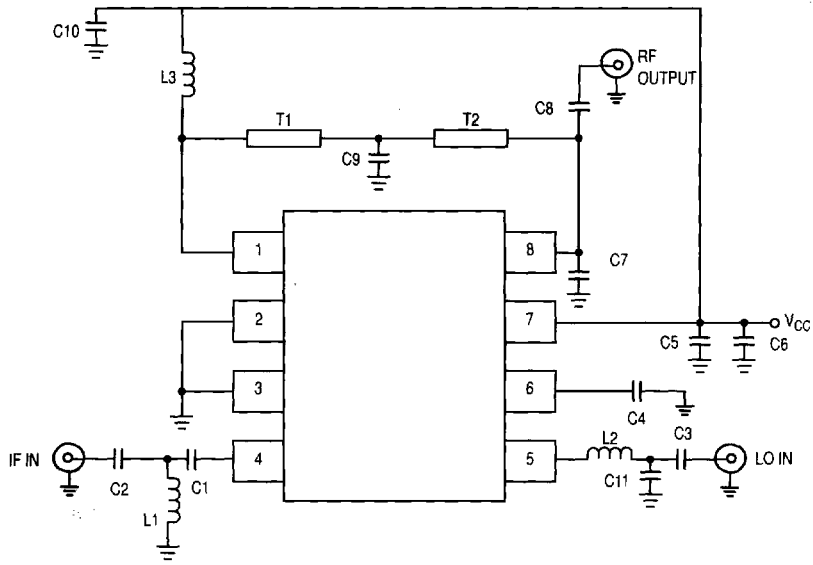


Figure 1. 903 MHz Configuration Test Circuit



C1, C6, C10	1000 pF
C2	10 pF
C3, C4, C5, C8	100 pF
C7	1.2 pF
C9	2.7 pF
C11	1 pF
L1,	180 nH
L2	3.3 nH
L3	2.7 nH
T1, T2	$1/8 \lambda$ 50 Ω Microstrip
Board Material	Epoxy/Glass $\epsilon_r = 4.45$

Figure 2. 1800 MHz Applications Circuit