RF2638

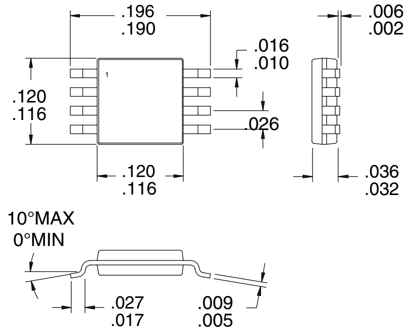
CDMA UPCONVERTER/BPSK MODULATOR

Typical Applications

- PCS/Cellular CDMA Systems
- PHS 1500/ WLAN 2400 Systems
- General Purpose Upconverter
- BPSK Modulation
- Micro-Cell PCS Base Stations
- Portable Battery Powered Equipment

Product Description

The RF2638 is a complete upconverter designed for cellular and PCS applications. This device may also be used to directly BPSK modulate a carrier. The unit operates at 3.0V and is designed as part of the RFMD PCS/Cellular CDMA Chip Set, consisting of a Transmit IF AGC Amp, this Transmit Upconverter, a Receive LNA/Mixer, and a Receive IF AGC Amp.



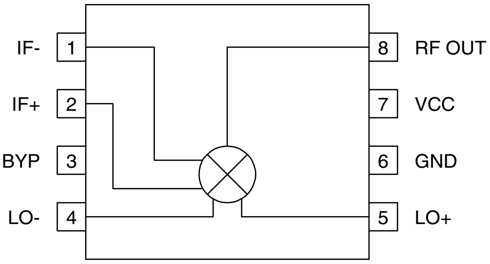
Package Style: MSOP-8

Optimum Technology Matching® Applied

☑ Si BJT ☐ GaAs HBT ☐ GaAs MESFET
☐ Si Bi-CMOS ☐ SiGe HBT ☐ Si CMOS

Features

- Supports Dual Mode Operation
- +13dBm Output IP3 (830MHz)
- Single 3.0V Power Supply
- Miniature 8 Pin Package
- Double-Balanced Mixer



Functional Block Diagram

Ordering Information

RF2638	CDMA Upconverter/BPSK Modulator
RF2638 PCBA	Fully Assembled Evaluation Board

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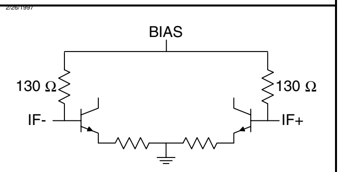
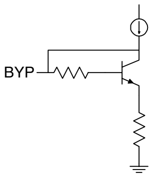
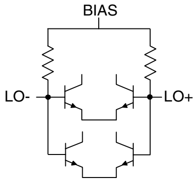
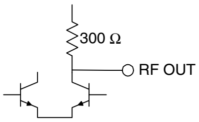
Tel (336) 664 1233
Fax (336) 664 0454
http://www.rfmd.com

Absolute Maximum Ratings

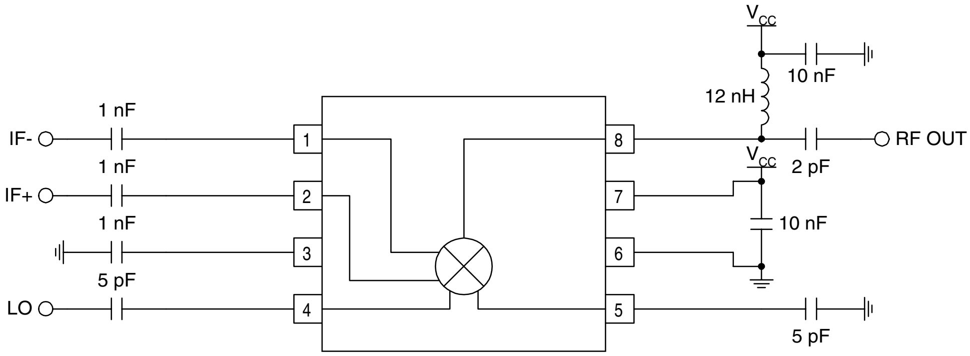
Parameter	Rating	Unit
Supply Voltage	-0.5 to +5.0	V_{DC}
Input RF Power	+3	dBm
Operating Ambient Temperature	-30 to +80	°C
Storage Temperature	-30 to +150	°C

Caution! ESD sensitive device.

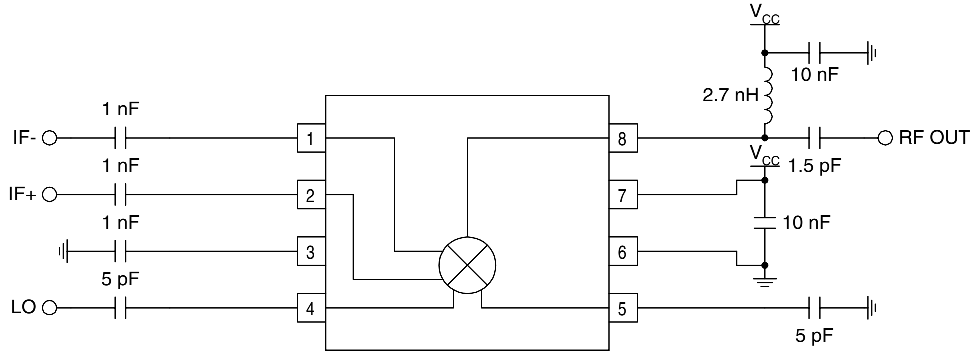
Parameter	Specification			Unit	Condition
	Min.	Typ.	Max.		
Overall					T=25°C, V_{CC}=3.0V, LO=1960MHz@-3dBm
RF Output Frequency Range		500 to 2500		MHz	
Conversion Gain		0		dB	RF out=830MHz
	-3.5	-1.5		dB	RF out=1830MHz
Noise Figure		14		dB	RF out=830MHz
		14		dB	RF out=1830MHz
Output IP3		+13		dBm	P_{IN}=-13dBm per Tone, RF out=830MHz
	+7	+11		dBm	P_{IN}=-13dBm per Tone, RF out=1830MHz
Spurious Product Rejection		30		dBc	Referenced to RF output
IF Input					
IF Frequency		DC to 300		MHz	
Differential Input Impedance	220	260	300	Ω	
IF to RF Output Isolation		30		dB	
IF to LO Isolation		30		dB	
LO Input					
LO Frequency Range		300 to 2700		MHz	
LO Level		-6 to 0		dBm	
LO to RF Output Leakage	-18	-25		dBm	
RF to LO Isolation		30		dB	
LO Input VSWR		2:1			50Ω
Power Supply					
Voltage	2.7	3.0	3.3	V	
Current Consumption		25		mA	

Pin	Function	Description	Interface Schematic
1	**IF-**	Balanced IF Input Pin. This pin is internally DC biased and should be DC blocked if connected to a device with a DC level present. For single-ended input operation, one pin is used as an input and the other IF input is AC coupled to ground. The balanced, as well as single-ended, input impedance is 260Ω.	
2	**IF+**	Same as pin 1, except complementary input.	See Pin 1.
3	**BYP**	Bypass pin for internal bias circuitry. Bypass with a 1nF capacitor.	
4	**LO-**	Balanced LO Input Pin. This pin is internally DC biased and should be DC blocked if connected to a device with a DC level present. For single-ended input operation, one pin is used as an input and the other LO input is AC coupled to ground. The balanced, as well as single-ended, input impedance is 50Ω.	
5	**LO+**	Same as pin 4, except complementary input.	See Pin 4.
6	**GND**	Ground connection. Keep traces physically short and connect immediately to ground plane for best performance.	
7	**VCC**	Supply Voltage pin. External bypassing is required. External RF, LO, and IF bypassing is required. The trace length between the pin and the bypass capacitors should be minimized. The ground side of the bypass capacitors should connect immediately to ground plane.	
8	**RF OUT**	RF Output Pin.	

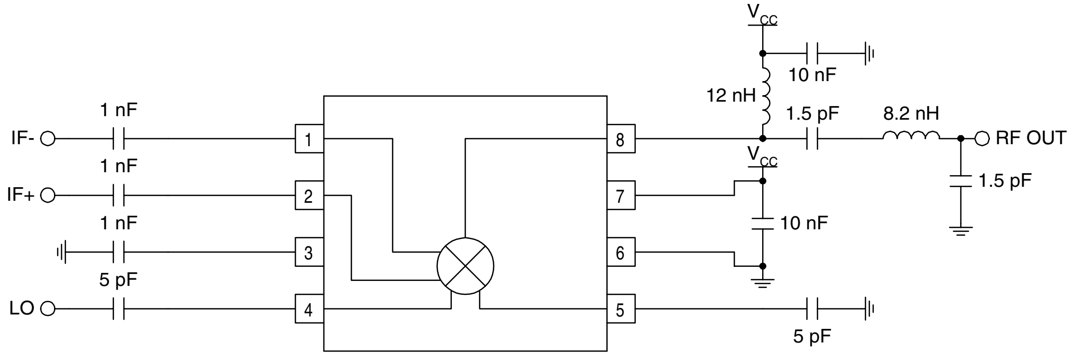
830MHz Application Schematic



1830MHz Application Schematic

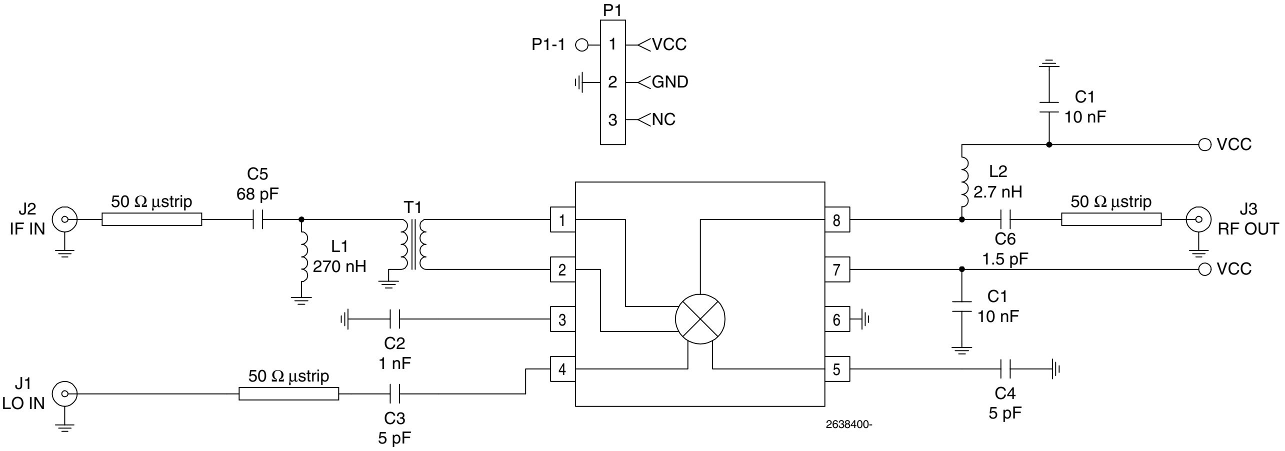


Dual-Band (830MHz to 1830MHz) Application Schematic



Evaluation Board Schematic

(Download Bill of Materials from www.rfmd.com.)



Evaluation Board Layout
Board Size 2.0” x 2.0”

Board Thickness 0.031”, Board Material FR-4