

W-CDMA AND CDMA UPCONVERTER/ BPSK MODULATOR

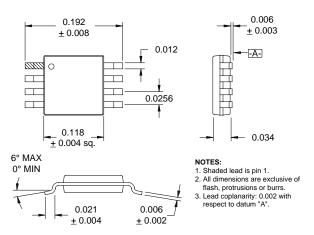
RoHS Compliant & Pb-Free Product

Typical Applications

- W-CDMA Systems
- PCS/Cellular CDMA Systems
- PHS 1500/WLAN 2400 Systems
- General Purpose Upconverter
- BPSK Modulation
- Micro-Cell PCS Base Stations

Product Description

The RF2638 is a complete upconverter designed for cellular, PCS and W-CDMA applications. This device may also be used to directly BPSK modulate a carrier. The unit operates at 3.0 V and is designed as part of the RFMD PCS/Cellular CDMA and W-CDMA Chip Sets.

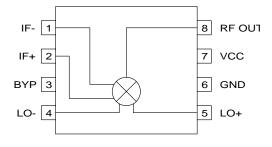


Optimum Technology Matching® Applied

- ☐ Si BJT

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

- ☐ InGaP/HBT
- ☐ GaN HEMT
- ☐ SiGe Bi-CMOS



Functional Block Diagram

Package Style: MSOP-8

Features

- Supports Dual Mode Operation
- +10dBm Output IP3 (1950MHz)
- +13dBm Output IP3 (830MHz)
- Single 3.0 V Power Supply
- Miniature 8-Pin Package
- Double-Balanced Mixer

Ordering Information

RF2638 W-CDMA and CDMA Upconverter/ BPSK

Modulator

RF2638 PCBA-PCS/CEL Fully Assembled Evaluation Board RF2638 PCBA-DO Fully Assembled Evaluation Board

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 Greensboro, NC 27409, USA
 http://www.rfmd.com

RF2638

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	℃
Storage Temperature	-30 to +150	℃



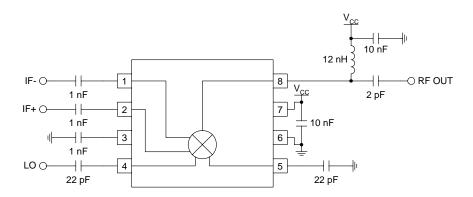
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Donomoton		Specification		l les!4	Condition	
Parameter	Min.	Min. Typ. Max.		Unit		
Overall					T=25°C, V _{CC} =3.0V	
RF Output Frequency Range		500 to 2500		MHz		
Spurious Product Rejection		30		dBc	Referenced to RF output	
Cellular					T=25°C, V _{CC} =3.0V, LO=960MHz@-3dBm,	
					IF=130MHz@-13dBm	
Conversion Gain	-1	-0.5		dB	RF _{OUT} =830MHz	
	-2.2	-1		dB	RF _{OUT} =836MHz (Dual-Output board)	
Noise Figure		14		dB	RF _{OUT} =830MHz	
Output IP3		+13		dBm	P _{IN} =-13dBm per Tone, RF out=830MHz	
					T=25°C, V _{CC} =3.0V,	
PCS					LO=1750MHz@-3dBm,	
		,_			IF=130MHz@-13dBm	
Conversion Gain	-3.0	-1.5		dB	RF _{OUT} =1880MHz	
	-3.5	-2.5		dB	RF _{OUT} =1880MHz (Dual-Output board)	
Noise Figure		15		dB	RF _{OUT} =1880MHz	
Output IP3	+7	+11		dBm	P _{IN} =-13dBm per Tone, RF out=1880MHz	
					T=25°C, V _{CC} =3.0V,	
W-CDMA					LO=2330 MHz @ -3dBm,	
ACDD	50	F-7	FC	4D.	IF=380MHz@-13dBm	
ACPR Conversion Gain	-58 -2.0	-57 -1.0	-56 0	dBc dB	RF _{OUT} =1950MHz	
Noise Figure	13	14	15	dB dB	00.	
ŭ	_		15	-	RF _{OUT} =1950MHz	
Output IP3	+8	+10	44	dBm	P _{IN} =-13dBm per Tone, RF _{OUT} =1950MHz	
Max OIP3 IF Input			11	dBm		
IF Frequency	DC	120/200	500	MU		
Differential Input Impedance	220	130/380 260	500 300	MHz Ω	IF=130MHz	
IF to RF Output Isolation	220	30	300	dB	11 - 130101112	
IF to LO Isolation		30		dB		
LO Input				uD		
LO Frequency Range		300 to 2700		MHz		
LO Level		-6 to 0		dBm		
LO to RF Output Leakage	-18	-25		dBm		
, ,	-15	-17		dBm	At Cellular band, high side injection	
					(Dual-Output board)	
	-14	-15		dBm	At PCS band, low side injection (Dual-Output board)	
RF to LO Isolation		30		dB	, , ,	
LO Input VSWR		2:1			50Ω	
Power Supply						
Voltage	2.7	3.0	3.3	V		
Current Consumption	1	25		mA		

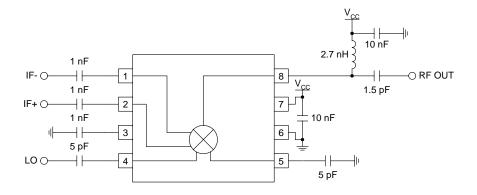
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Pin	Function	Description	Interface Schematic
1	IF-	Balanced IF input pin. This pin is internally DC-biased and should be DC-blocked if connected to a device with a DC level present. For single-ended input operation, one pin is used as an input and the other IF input is AC-coupled to ground. The balanced, input impedance is 260Ω .	BIAS 130 Ω 17- 18- 18- 18- 18- 18- 18- 18-
2	IF+	Same as pin 1, except complementary input.	See pin 1.
3	ВҮР	Bypass pin for internal bias circuitry. Bypass with a 1nF capacitor.	BAL
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.	BIAS LO+
5	LO+	Same as pin 4, except complementary input.	See pin 4.
6	GND	Ground connection. For best performance, keep traces physically short and connect immediately to ground plane.	
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.	≥300 Ω RF OUT

Application Schematic 836MHz

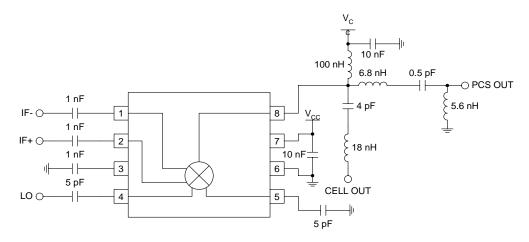


Application Schematic 1880MHz

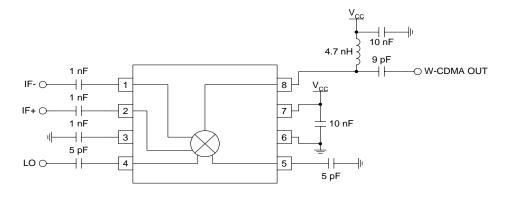


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Application Schematic Dual-Band Output (836MHz/1880MHz)

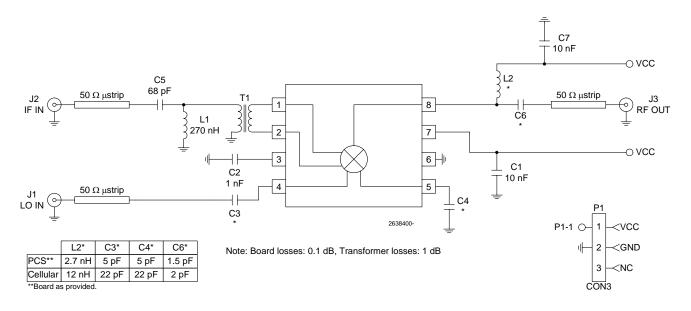


Application Schematic W-CDMA (1950MHz)

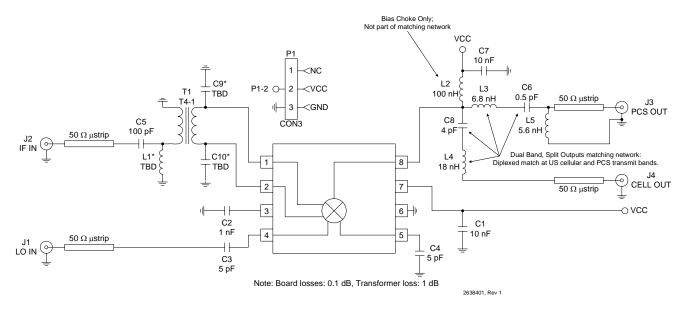


Evaluation Board Schematic - PCS/Cellular RF = 1880MHz, IF = 130MHz

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

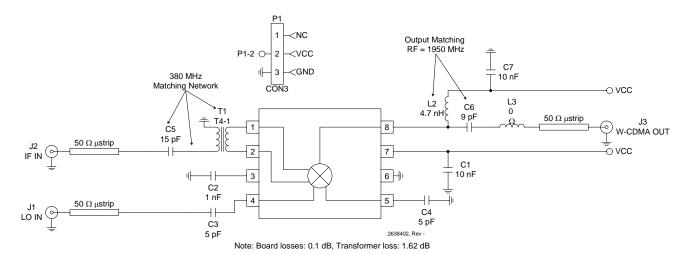


Evaluation Board Schematic - Dual Output Cellular Out=836MHz, PCS Out=1880MHz, IF=130MHz



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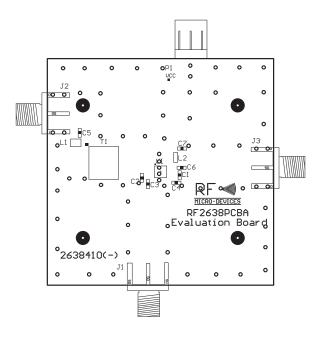
Evaluation Board Schematic - W-CDMA RF = 1950MHz, IF = 380MHz

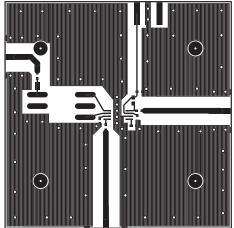


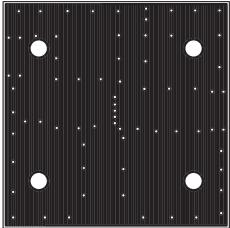
Evaluation Board Layout PCS/Cellular

Board Size 2.0" x 2.0"

Board Thickness 0.031", Board Material FR-4





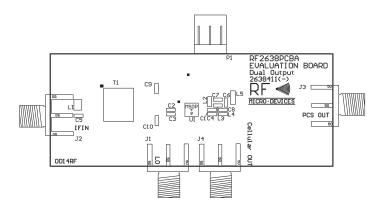


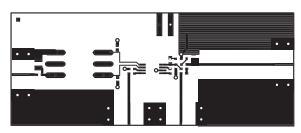
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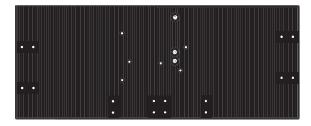
Evaluation Board Layout Dual Output

Board Size 2.5" x 1.0"

Board Thickness 0.060", Board Material FR-4, Multi-Layer (Intermediate layers (Ground Plane and Power Plane [$V_{\rm CC1}$]) are not shown.)



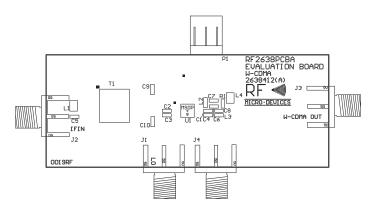


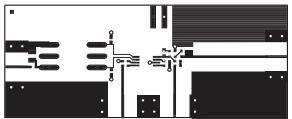


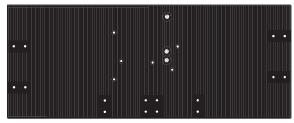
Evaluation Board Layout W-CDMA

Board Size 2.5" x 1.0"

Board Thickness 0.060", Board Material FR-4, Multi-Layer (Intermediate layers (Ground Plane and Power Plane [$V_{\rm CC1}$]) are not shown.)







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