

CDMA/FM UPCONVERTER/BPSK MODULATOR

Typical Applications

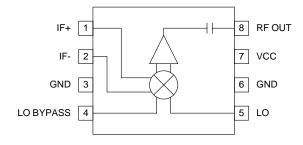
- CDMA/FM Cellular Systems
- Supports Dual-Mode AMPS/CDMA
- Supports Dual-Mode TACS/CDMA
- Commercial and Consumer Systems
- Battery-Operated Systems

Product Description

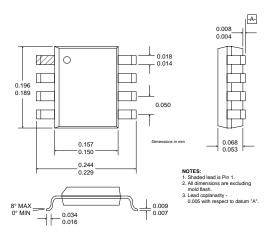
The RF2608 is a complete upconverter designed for CDMA/FM cellular applications. The IC contains a double-balanced mixer stage and an output buffer amplifier stage. This device may also be used to directly BPSK modulate a carrier. The mixer is a Gilbert cell with emitter degeneration resistors to provide high IP $_3$. The output stage is a class-B, push-pull configuration to reduce the overall current and still provide a good 50Ω output match. The unit operates at a supply voltage of $2.7\,\text{V}$ to $5.0\,\text{V}$ and does not require any external matching components other than coupling capacitors. This circuit is designed as part of the RFMD CDMA chipset, consisting of a Transmit IF AGC Amp, this Transmit Upconverter, a Receive LNA/ Mixer, and a Receive IF AGC Amp.

Optimum Technology Matching® Applied

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



Functional Block Diagram



Package Style: SOIC-8

Features

- Supports Dual Mode Operation
- +7dBm Output Intercept Point
- Single 2.7V to 5.0V Power Supply
- Internally Matched Inputs and Outputs
- Buffered Output
- Double-Balanced Mixer

Ordering Information

RF2608 CDMA/FM Upconverter/BPSK Modulator RF2608 PCBA Fully Assembled Evaluation Board

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RF2608

Absolute Maximum Ratings

Parameter	Rating	Unit			
Supply Voltage	-0.5 to 7	V_{DC}			
Input RF Power	+10	dBm			
Operating Ambient Temperature	-40 to +85	°C			
Storage Temperature	-40 to +150	°C			



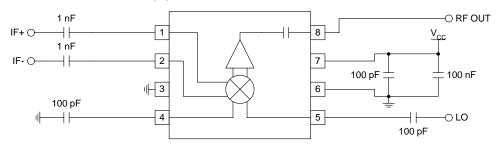
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Parameter	Specification		Unit	Condition		
Parameter	Min.	Тур.	Max.	Unit	Condition	
Overall					T=25°C, V _{CC} =3.6V, RF=840MHz, LO=970MHz @ -2 dBm, IF=130MHz @ -12 dBm	
RF Output Frequency Range	500	824 to 849	1500	MHz		
Conversion Gain	-1.3	+0.5	+1.6	dB		
Noise Figure		15	18	dB		
Output IP3	+5	+7		dBm		
Output VSWR		1.6:1	2.0:1		50Ω	
Spurious Product Rejection		30		dBc	Referenced to RF output	
IF Input						
IF Frequency	DC	130	200	MHz		
Differential Input Impedance	215	265	315	Ω		
IF to RF Output Isolation	21	23		dB	IF=130MHz	
IF to LO Isolation	40	50		dB		
LO Input						
LO Frequency Range	300	954 to 979		MHz		
LO Level		-3 to +3		dBm		
LO to RF Output Leakage		-28	-25	dBm		
LO Input VSWR		<1.1:1	2.0:1		50Ω	
Power Supply						
Voltage		2.7 to 5.0		V		
Current Consumption	16	22	28	mA	V _{CC} =3.6V	

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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, as well as single-ended, input impedance is 265Ω . The IF input should be used differentially when the part is used as a BPSK modulator.	IF+ O IF-
2	IF-	Same as pin 1, except complementary input.	See pin 1.
3	GND	Ground connection. For best performance, keep traces physically short and connect immediately to ground plane.	
4	LO BYPASS	Bypass connection for the LO. A capacitor of 100pF to ground should be connected to this pin	LO OBYPASS BIAS
5	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 single-ended, input impedance is 50Ω .	See pin 4.
6	GND	Same as pin 3.	
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. This pin is internally DC-blocked. The output impedance is 50Ω	RFOUT

Application Schematic

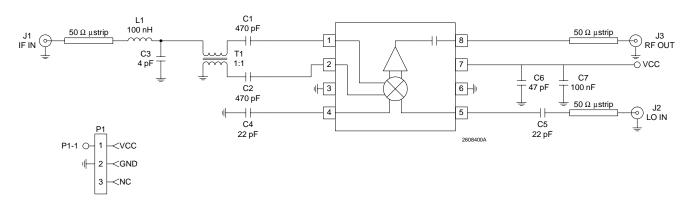


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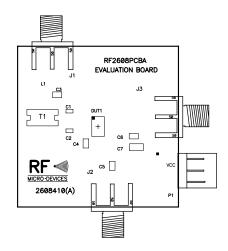
Evaluation Board Schematic

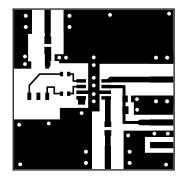
(Download Bill of Materials from www.rfmd.com.)



Evaluation Board Layout Board Size 1.420" x 1.420"

Board Thickness 0.031", Board Material FR-4





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