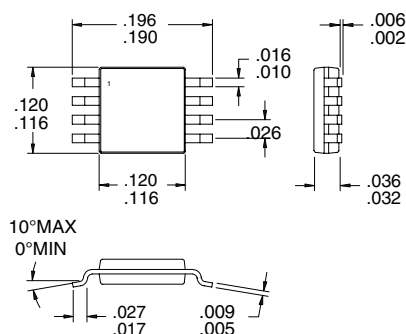


Typical Applications

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

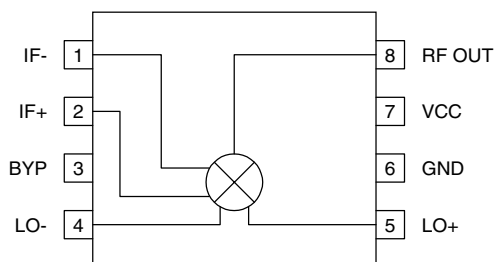
Product Description

The RF2639 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.



Optimum Technology Matching® Applied

- | | | |
|--|-----------------------------------|--------------------------------------|
| <input checked="" type="checkbox"/> Si BJT | <input type="checkbox"/> GaAs HBT | <input type="checkbox"/> GaAs MESFET |
| <input type="checkbox"/> Si Bi-CMOS | <input type="checkbox"/> SiGe HBT | <input type="checkbox"/> Si CMOS |



Functional Block Diagram

Package Style: MSOP-8

Features

- Supports Dual Mode Operation
- +2dBm Output Intercept Point
- Single 3.0V Power Supply
- Miniature 8 Pin Package
- Double-Balanced Mixer

Ordering Information

- | | |
|-------------|----------------------------------|
| RF2639 | Upconverter/BPSK Modulator |
| RF2639 PCBA | Fully Assembled Evaluation Board |

RF Micro Devices, Inc.
7625 Thorndike Road
Greensboro, NC 27409, USA

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

Absolute Maximum Ratings

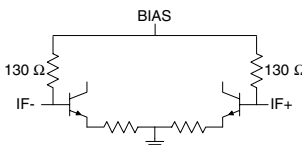
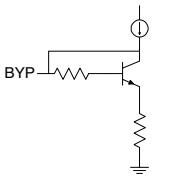
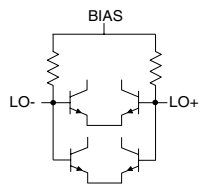
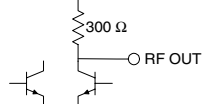
| Parameter | Rating | Unit |
|-------------------------------|--------------|-----------------|
| Supply Voltage | -0.5 to +5.0 | V _{DC} |
| Input RF Power | +3 | dBm |
| Operating Ambient Temperature | -30 to +80 | °C |
| Storage Temperature | -30 to +150 | °C |



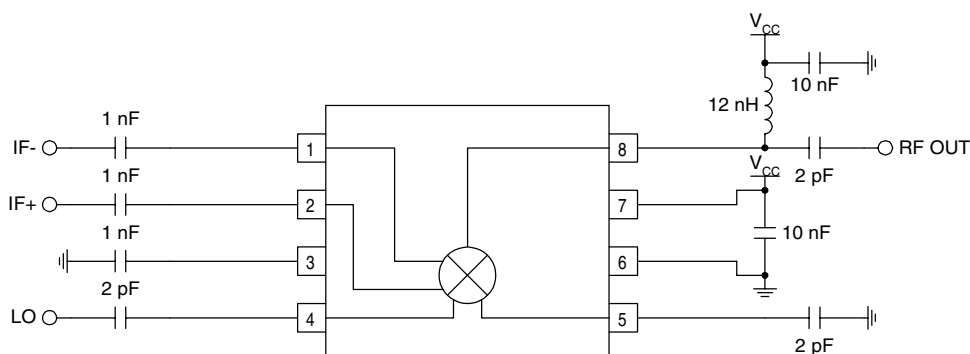
Caution! ESD sensitive device.

RF Micro Devices believes the furnished information is correct and accurate at the time of this printing. However, RF Micro Devices reserves the right to make changes to its products without notice. RF Micro Devices does not assume responsibility for the use of the described product(s).

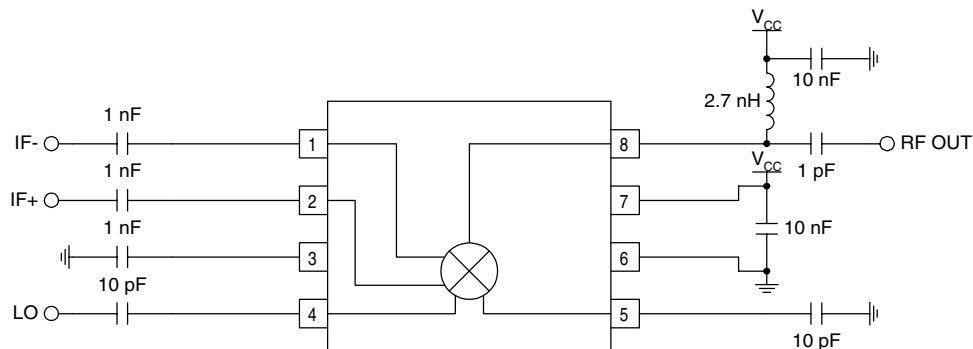
| Parameter | Specification | | | Unit | Condition |
|------------------------------|---------------|-------------|------|------|--|
| | Min. | Typ. | Max. | | |
| Overall | | | | | T=25°C, V _{CC} =3.0V |
| RF Output Frequency Range | | 500 to 2500 | | MHz | |
| Conversion Gain | | -1.0 | | dB | RF out=830MHz |
| | | -3.0 | | dB | RF out=1830MHz |
| Noise Figure | | 11 | | dB | RF out=830MHz |
| | | 11 | | dB | RF out=1830MHz |
| Output IP3 | | +1 | | dBm | P _{IN} =-23dBm per Tone, RF out=830MHz |
| | | -1 | | dBm | P _{IN} =-23dBm 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 | | 260 | | 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 | | -20 | | dBm | |
| RF to LO Isolation | | 30 | | dB | |
| LO Input VSWR | | 2:1 | | | 50Ω |
| Power Supply | | | | | |
| Voltage | | 2.7 to 3.3 | | V | |
| Current Consumption | | 7 | | 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 1 nF 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. |  |
| 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. |  |

836 MHz Application Schematic

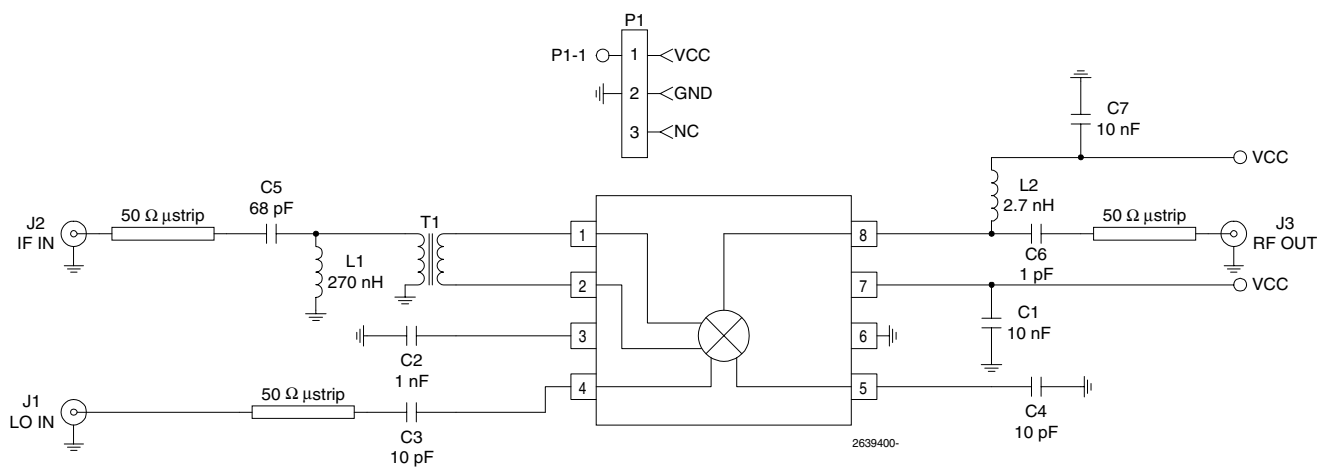


1830 MHz Application Schematic



Evaluation Board Schematic

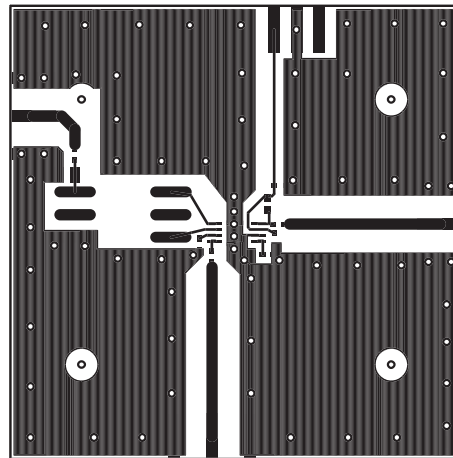
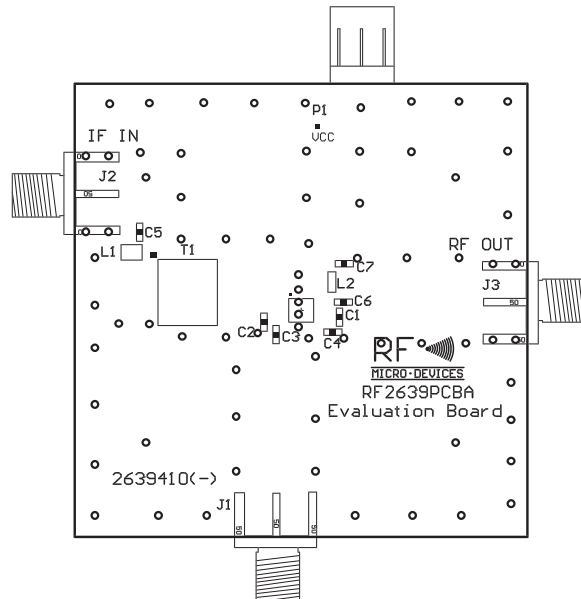
(Download [Bill of Materials](http://www.rfmd.com) from www.rfmd.com.)



Evaluation Board Layout

Board Size 2.0" x 2.0"

Board Thickness 0.031", Board Material FR-4



RF2639

6

MIXERS