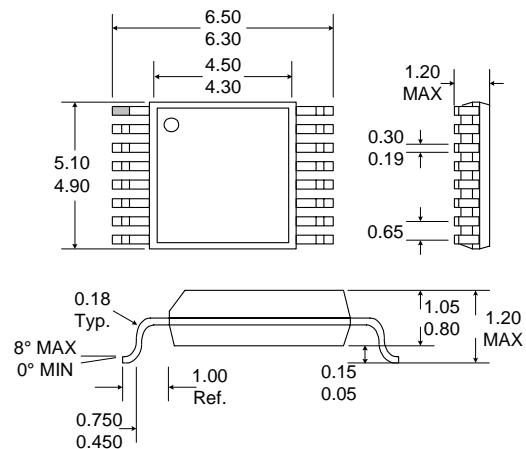


Typical Applications

- TDMA/CDMA PCS Systems
- Portable Battery-Powered Equipment

Product Description

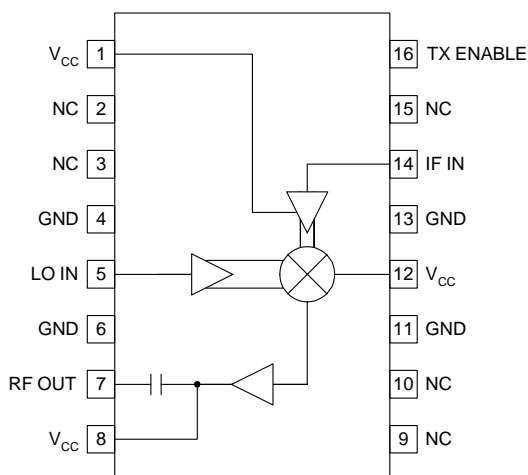
The RF2603 is a upconverter/pre-driver designed for PCS systems. The device features single-ended IF and LO inputs and single-ended RF output for ease of interface. The RF2603 is manufactured on an advanced Gallium Arsenide Heterojunction Bipolar Transistor (HBT) process and is packaged in a TSSOP-16 package.



Optimum Technology Matching® Applied

- |                                     |  |                                      |
|-------------------------------------|--|--------------------------------------|
| <input type="checkbox"/> Si BJT     | <input checked="" 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     |

Package Style: TSSOP-16



Functional Block Diagram

Features

- Single Supply 2.8V Operation
- +3dBm Typical Output 1 dB Compression Point
- Power Down Control
- 17dB Conversion Gain

Ordering Information

- |             |                                  |
|-------------|----------------------------------|
| RF2603      | 2.8V PCS Upconverter             |
| RF2603 PCBA | Fully Assembled Evaluation Board |

RF Micro Devices, Inc.  
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<http://www.rfmd.com>

# RF2603

## Absolute Maximum Ratings

Parameter	Rating	Unit
Supply Voltage	-0.5 to +5.5	V
Enable Voltage	-0.5 to +5.5	V
LO Input Power	+3	dBm
Input IF Power	+3	dBm
Operating Temperature Range	-30 to +85	°C
Storage Temperature	-30 to +150	°C



**Caution!** ESD sensitive device.

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Parameter	Specification			Unit	Condition
	Min.	Typ.	Max.		
<b>Overall</b>					T=25°C, V <sub>CC</sub> =2.8V, RF <sub>OUT</sub> =1880MHz, LO=2076MHz @ -5dBm, IF=196MHz @ -25dBm
RF Output Frequency Range		1850 to 1910		MHz	Single Sideband
Conversion Gain	14	17		dB	
Noise Figure		11		dB	
Output P1dB	0	3		dBm	
RF Output Third Order Intercept		11		dBm	
IF Frequency	70		350	MHz	
LO Input Level	-10	-3	0	dBm	
LO Input VSWR		1.5:1			Recommended Operating Range Recommended Operating Range 50Ω
RF Output VSWR		1.5:1			
<b>Spurious</b>					
LO Feedthrough		-15	-10	dB	P <sub>OUT</sub> =0dBm
<b>Power Supply</b>					
Supply Voltage (V <sub>CC</sub> )	2.7	2.8	2.9	V	
Power Supply Current		30	40	mA	
TX Enable Voltage On		V <sub>CC</sub>		V	
TX Enable Voltage Off		0		V	

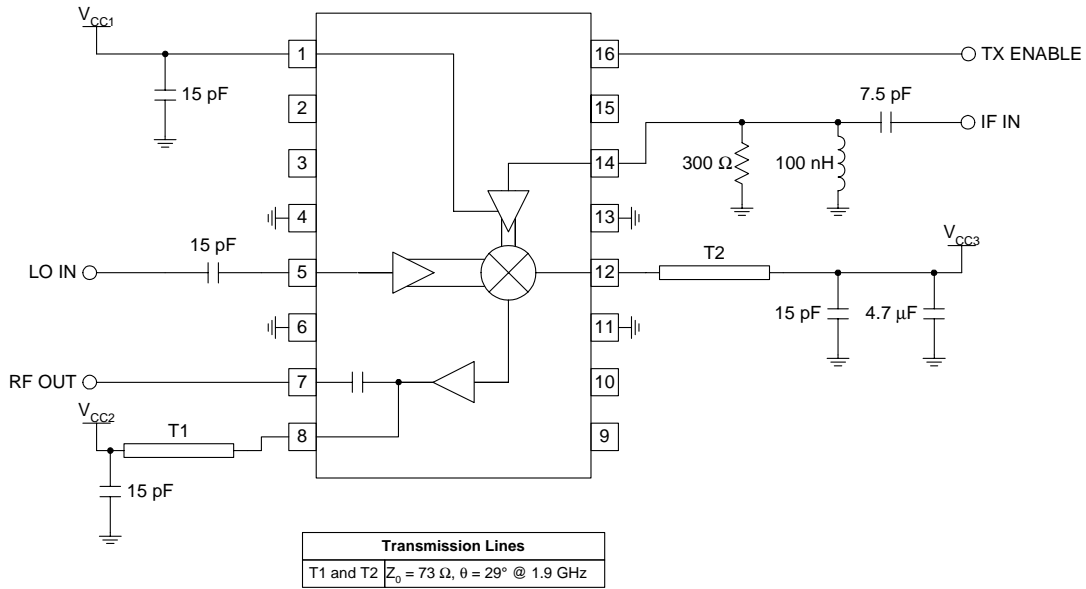
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MIXERS

Pin	Function	Description	Interface Schematic
1	VCC	Supply Voltage pin. External bypassing is required. The trace length between the pin and bypass capacitors should be minimized. The ground side of the bypass capacitor should be connected immediately to ground plane.	
2	NC	Not connected.	
3	NC	Not connected.	
4	GND	Ground connection. For best performance, keep traces physically short and connect immediately to ground plane.	
5	LO IN	LO input pin. This pin is internally DC-biased and should be DC-blocked if connected to a device with a DC level present. The input impedance is 50Ω.	
6	GND	Ground connection. For best performance, keep traces physically short and connect immediately to ground plane.	
7	RF OUT	RF output pin. This pin is internally DC-biased and should be DC-blocked if connected to a device with a DC level present. This pin must be externally matched for 50Ω output impedance.	
8	VCC	Supply Voltage pin. External bypassing is required. Either a length of transmission line or external inductor is needed between this pin and the bypass capacitor for tuning the output to 50Ω.	
9	NC	Not connected.	
10	NC	Not connected.	
11	GND	Ground connection. For best performance, keep traces physically short and connect immediately to ground plane.	
12	VCC	Supply Voltage pin. External bypassing is required. Either a length of transmission line or external inductor is needed between this pin and the bypass capacitor for tuning the mixer.	
13	GND	Ground connection. For best performance, keep traces physically short and connect immediately to ground plane.	
14	IF IN	IF input pin. This pin is internally DC-biased and should be DC-blocked if connected to a device with a DC level present.	
15	NC	Not connected.	
16	TX ENABLE	TX enable pin.	

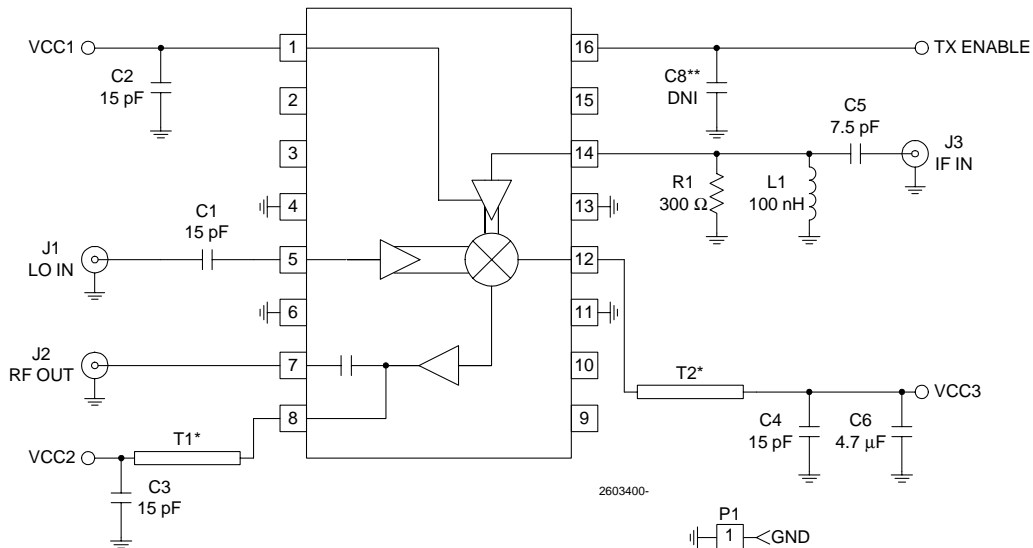
# RF2603

## Application Schematic

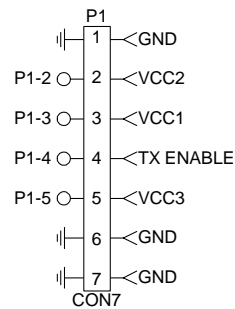


## Evaluation Board Schematic

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

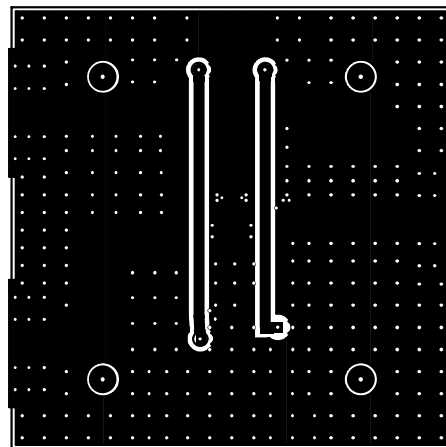
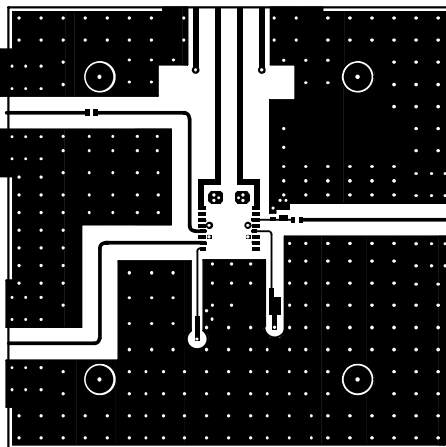
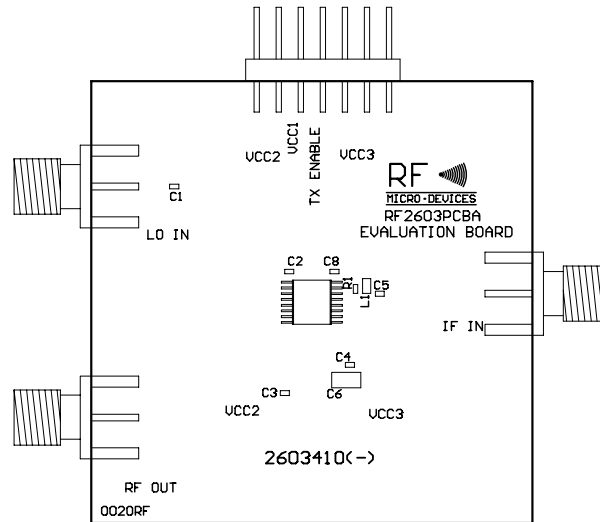


\*T1 and T2, 73  $\Omega$ , Electrical Length =  $29^\circ @ 1.9 \text{ GHz}$   
 \*\*Denotes components which should not be populated on evaluation board.



Evaluation Board Layout  
Board Size 2.0" x 2.0"

Board Thickness 0.035", Board Material Rogers 4003



**RF2603**

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**MIXERS**