RF2603

2.8V PCS UPCONVERTER

Typical Applications

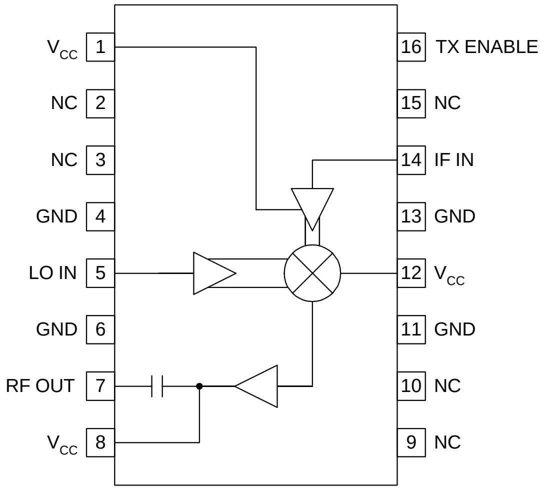
- TDMA/CDMA PCS Systems
- Portable Battery-Powered Equipment

Product Description

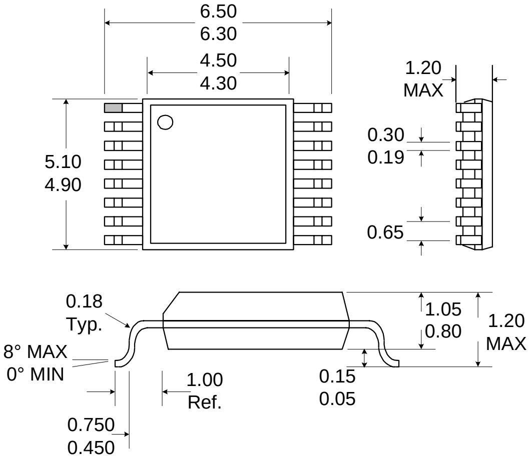
The RF2603 is a upconverter/pre-driver designed for PCS systems. The device features single-ended IF and LO inputs and single-ended RF output for ease of interface. The RF2603 is manufactured on an advanced Gallium Arsenide Heterojunction Bipolar Transistor (HBT) process and is packaged in a TSSOP-16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

Optimum Technology Matching® Applied

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



Functional Block Diagram



Package Style: TSSOP-16

Features

- Single Supply 2.8V Operation
- +3dBm Typical Output 1dB 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.
7625 Thorndike Road
Greensboro, NC 27409, USA

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

Absolute Maximum Ratings

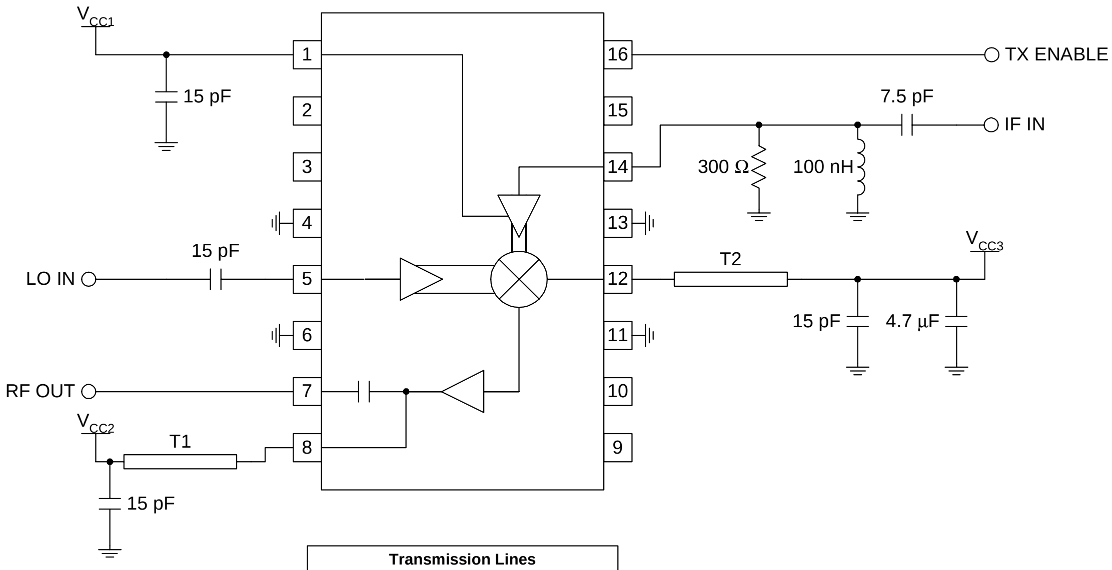
Parameter	Rating	Unit
Supply Voltage	-0.5 to +5.5	V
Enable Voltage	-0.5 to +5.5	V
LO Input Power	+3	dBm
Input IF Power	+3	dBm
Operating Temperature Range	-30 to +85	°C
Storage Temperature	-30 to +150	°C

Caution! ESD sensitive device.

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

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.	

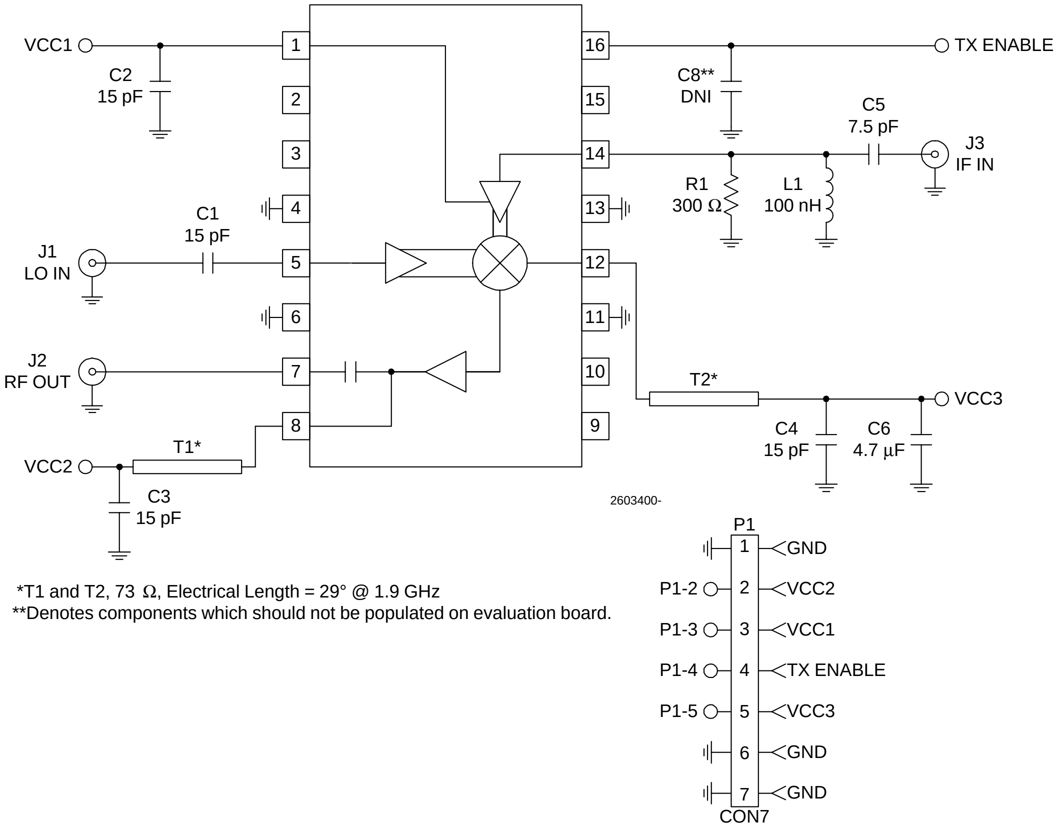
Application Schematic



Transmission Lines	
T1 and T2	Z_0 = 73 Ω, θ = 29° @ 1.9 GHz

Evaluation Board Schematic

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



*T1 and T2, 73 Ω, Electrical Length = 29° @ 1.9 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