RF2375

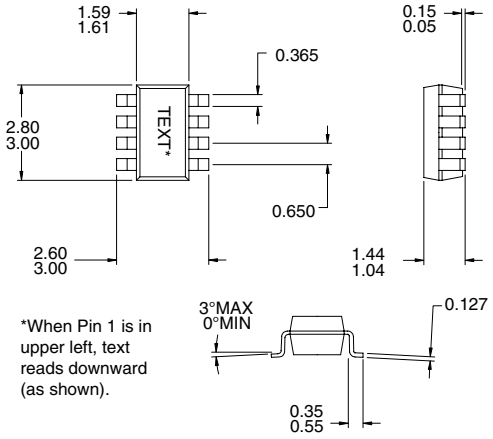
3V DCS LOW NOISE AMPLIFIER

Typical Applications

- LNA for DCS 1800/1900 Handsets
- IF or RF Buffer Amplifiers
- Driver Stage for Power Amplifiers
- Oscillator Loop Amplifiers

Product Description

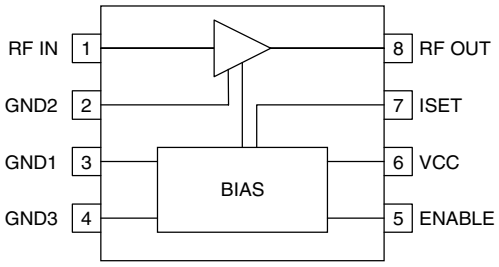
The RF2375 is a general purpose, low-cost, high performance, low noise amplifier designed for operation from a 2.7V to 4V supply with low current consumption. The attenuation of the device is controlled when in power down mode, providing a known gain step. The input IP_3 can be set with an external resistor to allow maximizing of the dynamic range of the receiver design. The RF2375 is available in a small industry-standard SOT-23-8 lead surface mount package, enabling compact designs which conserve board space. PTAT bias currents are used to bias the LNA.



Package Style: SOT-23-8

Optimum Technology Matching® Applied

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



Functional Block Diagram

Features

- 700MHz to 2000MHz Operation
- 2.7V to 3.6V Single Supply
- -5dBm Input IP_3 at 5.3mA
- 18dB Gain at 1950MHz
- 2.5dB Noise Figure
- 25dB Gain Step

Ordering Information

RF2375	3V DCS Low Noise Amplifier
RF2375 PCBA	Fully Assembled Evaluation Board

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Absolute Maximum Ratings

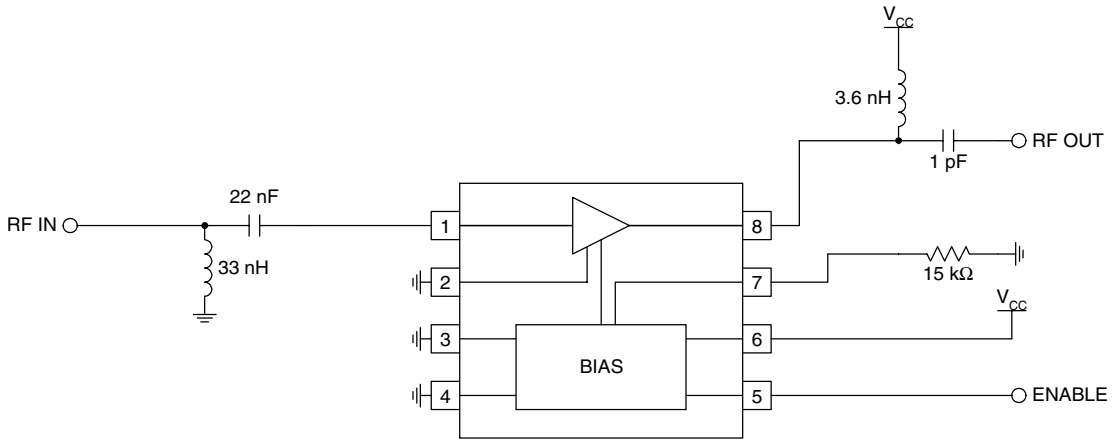
Parameter	Rating	Unit
Supply Voltage	4.0	V
Supply Current	20	mA
Operating Ambient Temperature	-40 to +85	°C
Storage Temperature	-40 to +150	°C

Caution! ESD sensitive device.

Parameter	Specification			Unit	Condition
	Min.	Typ.	Max.		
Overall					T=27°C, V_{CC}=2.7V, Freq=1950MHz
Frequency Range		700 to 2000		MHz	
LNA Performance					
Gain	16	18		dB	
Noise Figure		2.5		dB	
Input IP3	-6	-5		dBm	At 5.3mA
Input VSWR		2:1		dB	
Output VSWR			1.5:1	dB	
Off Mode Gain		-7		dB	
Power Control					
Power "ON" Voltage		CMOS High		V	Voltage on ENABLE
Power "OFF" Voltage		CMOS Low		V	Voltage on ENABLE
Current into ENABLE			1	µA	V_{ENABLE}=2.7V
Power Supply					
Operating Voltage		2.7 to 3.6		V	
Operating Current		5.3	7	mA	V_{CC}=2.7V, R_{ISET}=15kΩ
Leakage Current			1	µA	V_{ENABLE}=0V

Pin	Function	Description	Interface Schematic
1	RF IN	RF input pin. This pin is not internally DC blocked and requires an external blocking capacitor. The input impedance of this pin is internally matched to 50Ω using feedback.	
2	GND2	Ground connection for the bias circuits.	
3	GND1	Ground connection for the LNA. Keep traces physically short and connect immediately to ground plane for best performance.	
4	GND3	Same as pin 3.	
5	ENABLE	Power down control. This is a CMOS input. When this pin is CMOS "high" the device is enabled. When the level is CMOS "low" the device is shut off and a controlled attenuator is turned on.	
6	VCC	Power supply for the bias circuits.	
7	ISET	This pin sets the current for the device. A resistor to ground of 15kΩ provides a current of 5.3mA.	
8	RF OUT	RF output pin. The output impedance of this pin is internally matched to 50Ω using feedback. Bias for the LNA is provided through this pin, hence it should be connected to VCC through an inductor.	

Application Schematic



Evaluation Board Schematic

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