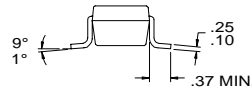
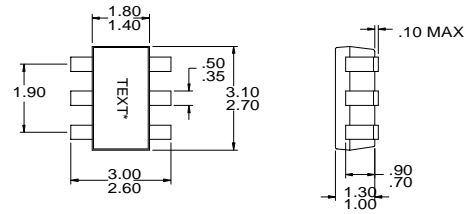


Typical Applications

- CDMA Cellular Handsets
- TDMA Cellular Handsets

Product Description

The RF2376 is a linear variable gain amplifier suitable for use in TDMA and CDMA systems in the cellular band. The features of this device include linear gain control, high gain, and low noise figure. The IC is manufactured on an advanced Gallium Arsenide Heterojunction Bipolar Transistor (GaAs HBT) process and is featured in an industry-standard miniature 6-lead plastic SOT package.



*When Pin 1 is in upper left, text reads downward (as shown).

All dimensions in mm.

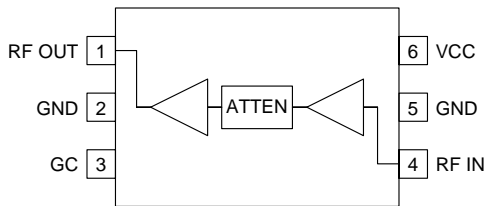
4
GENERAL PURPOSE
AMPLIFIERS

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: SOT23-6

- Features
- 50dB Linear Gain Control Range
 - 27dB Maximum Gain
 - Single 2.7V to 3.3V Supply
 - 30mA Supply Current
 - High Linearity
 - 7dB Noise Figure



Functional Block Diagram

Ordering Information

| | |
|-------------|---|
| RF2376 | Cellular TDMA/CDMA Linear Variable Gain Amplifier |
| RF2376 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 to +5.0 | V _{DC} |
| DC Current | 100 | mA |
| Operating Ambient Temperature | -20 to +85 | °C |
| Storage Temperature | -40 to +150 | °C |



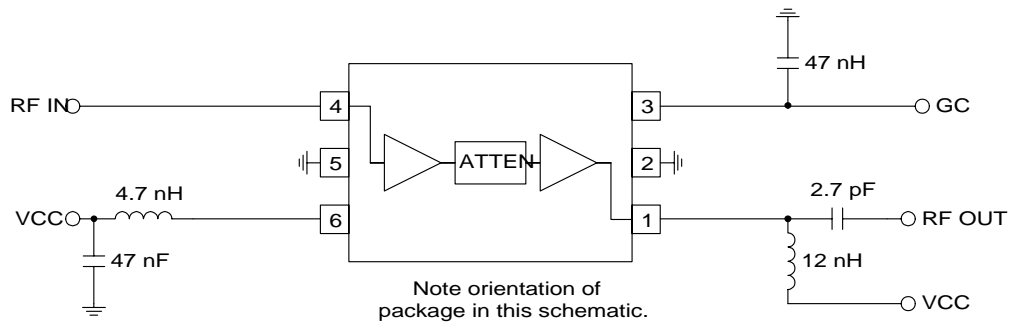
Caution! ESD sensitive device.

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 | | | | | V _{CC} =2.8V, V _{GC} =2.0V, T=25°C |
| Operating Frequency | | 836 | | MHz | |
| Usable Frequency Range | | 800 to >1000 | | MHz | |
| Maximum Small Signal Gain | 24 | 27 | 30 | dB | |
| Linear Gain Control Range | 50 | | | dB | |
| Gain Control Slope | | 70 | | dB/V | Maximum gain. |
| Input VSWR | | 1.5:1 | 2.5:1 | | Over entire gain control range |
| Output IP3 | +22 | +25 | | dBm | |
| Noise Figure | | 7 | | dB | Maximum gain |
| Maximum Average Output Power | | +8 | | dBm | TDMA modulation |
| Adjacent Channel Power Rejection | | -33 | -32 | dBc | TDMA modulation; P _{OUT} =+8dBm |
| Alternate Channel Power Rejection | | -61 | -57 | dBc | TDMA modulation; P _{OUT} =+8dBm |
| Maximum Average Output Power | | +10 | | dBm | CDMA modulation; V _{CC} =3.0V, maximum gain setting, ACPR _≤ -52dBc. |
| Adjacent Channel Power Rejection | | -53 | | dBc | CDMA modulation; V _{CC} =3.0V. For P _{IN} >-23dBm, adjustment of P _{IN} is required to maintain ACPR performance over gain control range. For P _{IN} ≤-23dBm, ACPR performance is maintained over entire gain control range. |
| Alternate Channel Power Rejection | | -67 | | dBc | CDMA modulation; P _{OUT} =+10dBm, V _{CC} =3.0V. |
| Power Supply | | | | | T = 25°C |
| Supply Voltage | | 2.8 | | V | Specifications |
| | | 2.7 to 3.3 | | V | Operating range |
| Gain Control Voltage | | 0 to 2.0 | | V | |
| Supply Current | 25 | 30 | 40 | mA | V _{CC} =2.8V, V _{GC} =2.0V |
| | | 34 | | mA | V _{CC} =3.0V, V _{GC} =2.0V |
| | | | 18 | mA | V _{CC} =2.8V, V _{GC} =0.4V |
| V _{GC} Current | | | 1.5 | mA | |

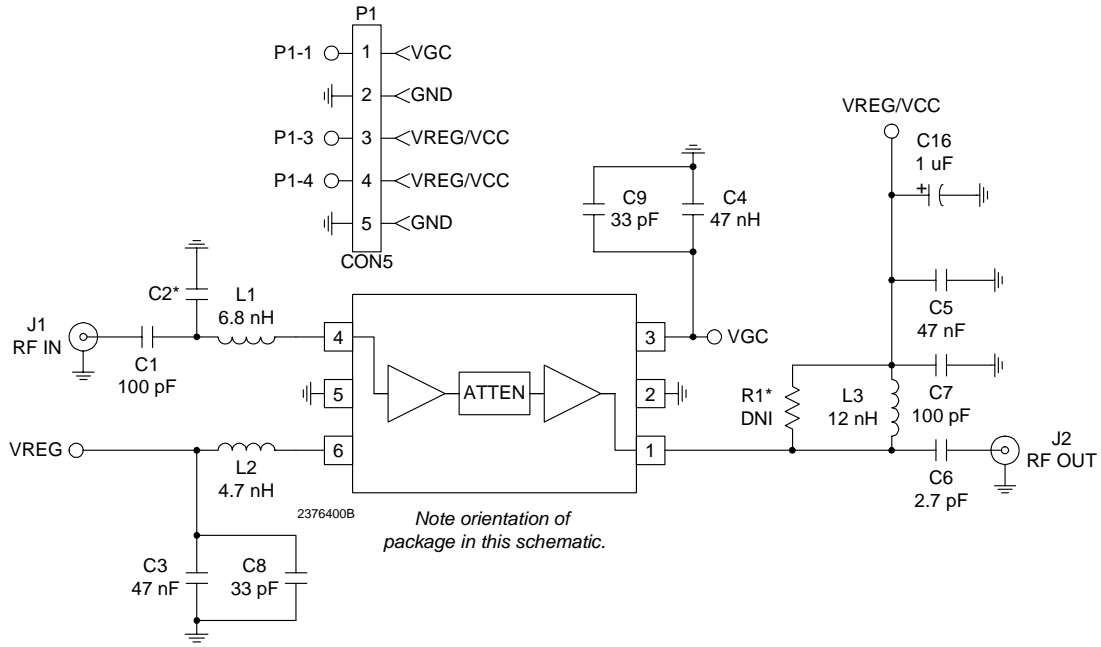
| Pin | Function | Description | Interface Schematic |
|-----|----------|--|---------------------|
| 1 | RF OUT | RF output pin. This pin is DC coupled and requires V_{CC} through a bias inductor sized accordingly to provide a high pass transformation with a series capacitor. | |
| 2 | GND | Ground connection. Keep traces physically short and connect immediately to ground plane for best performance. | |
| 3 | GC | Analog gain control pin. This pin controls the gain of the IC. Minimum gain occurs at $V_{GC} < 0.4V$ and maximum gain is achieved with $V_{GC} = 2.0V$. 50dB of linear gain control with little variation of input P_{1dB} is available. | |
| 4 | RF IN | RF input pin. This pin is AC coupled. | |
| 5 | GND | Ground connection. Keep traces physically short and connect immediately to ground plane for best performance. | |
| 6 | VCC | Power supply. This pin should be connected to a regulated supply and requires a bypass capacitor. Voltage is supplied through this pin to the first stage collector; this voltage also controls the bias. Gain may be tuned by adjusting the value of the feed inductor. | |

Application Schematic



Evaluation Board Schematic

4
GENERAL PURPOSE
AMPLIFIERS



Evaluation Board Layout
Board Size 2.0" x 2.0"
Board Thickness 0.028"; Board Material FR-4

