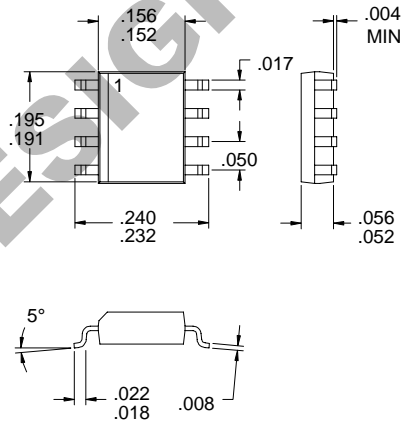


Typical Applications

- Broadband, Low Noise Gain Blocks
- IF or RF Buffer Amplifiers
- Driver Stage for Power Amplifiers
- Final PA for Low Power Applications
- Portable Battery Powered Equipment
- Broadband Test Equipment

Product Description

The RF2306 is a general purpose, low cost RF amplifier IC. The device is manufactured on an advanced Gallium Arsenide Heterojunction Bipolar Transistor (HBT) process, and has been designed for use as an easily-cascadable 50Ω gain block. Applications include IF and RF amplification in wireless voice and data communication products operating in frequency bands up to 2000MHz. The device is self-contained with 50Ω input and output impedances and requires only two external DC biasing elements to operate as specified.



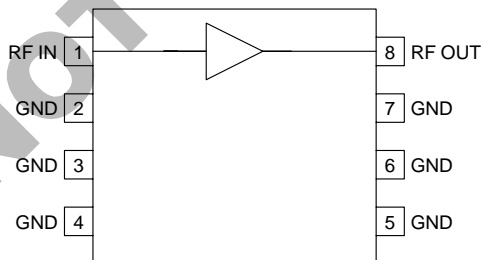
Package Style: SOP-8

Optimum Technology Matching® Applied

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

Features

- DC to 2000MHz Operation
- Internally matched Input and Output
- 20dB Small Signal Gain
- 3.5dB Noise Figure
- 10mW Linear Output Power
- Single Positive Power Supply



Functional Block Diagram

Ordering Information

- RF2306      General Purpose Amplifier  
 RF2306 PCBA      Fully Assembled Evaluation Board

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Greensboro, NC 27409, USA

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# RF2306

## Absolute Maximum Ratings

Parameter	Rating	Unit
Supply Current	65	mA
Input RF Power	+10	dBm
Operating Ambient Temperature	-40 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).

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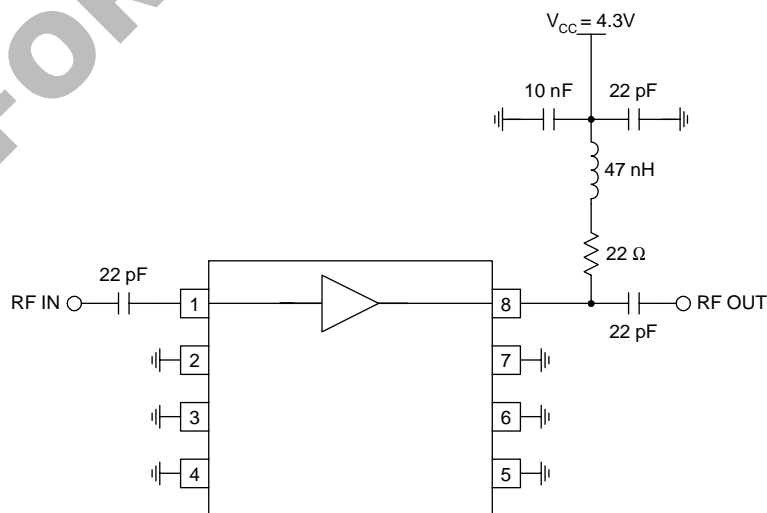
GENERAL PURPOSE  
AMPLIFIERS

Parameter	Specification			Unit	Condition
	Min.	Typ.	Max.		
<b>Overall</b>					T=25 °C, V <sub>CC</sub> =4.3V, R <sub>C</sub> =22Ω, Freq=1000MHz
Frequency Range		DC to 2000		MHz	
Gain	18 19.5	19.5 21	22 23.5	dB dB	Freq=1000MHz Freq=100MHz
Noise Figure		3.5		dB	
Input VSWR		<2:1			In a 50Ω system
Output VSWR		<2:1			In a 50Ω system
Output IP <sub>3</sub>		+20		dBm	
Output P <sub>1dB</sub>	+10	+12		dBm	
Saturated Output Power		+15		dBm	
Reverse Isolation		>20		dB	
<b>Power Supply</b>					
Operating Voltage		3.7		V	At pin 8
Operating Current	28	35	42	mA	V <sub>CC</sub> =4.3V, R <sub>C</sub> =22Ω
Operating Current Range		20 to 65		mA	

NOT FOR NEW DESIGNS

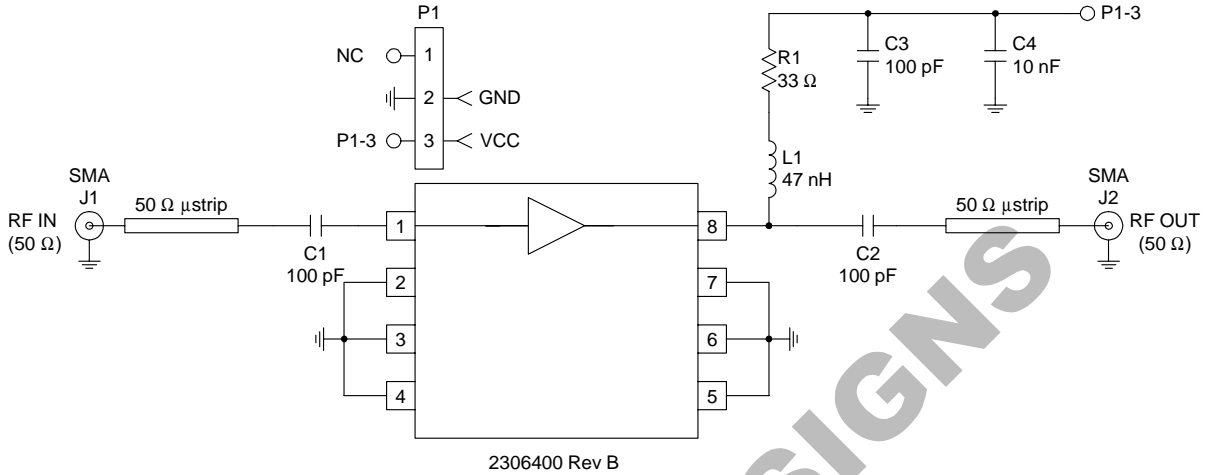
Pin	Function	Description	Interface Schematic
1	RF IN	RF input pin. This pin is NOT internally DC blocked. A DC blocking capacitor, suitable for the frequency of operation, should be used in most applications. DC coupling of the input is not allowed, because this will override the internal feedback loop and cause temperature instability.	
2	GND	Ground connection. Keep traces physically short and connect immediately to ground plane for best performance.	
3	GND	Same as pin 2.	
4	GND	Same as pin 2.	
5	GND	Same as pin 2.	
6	GND	Same as pin 2.	
7	GND	Same as pin 2.	
8	RF OUT	RF output and bias pin. Biasing is accomplished with an external series resistor and choke inductor to $V_{CC}$ . The resistor is selected to set the DC current into this pin to a desired level. At room temperature, this pin will bias itself to 3.7V as long as the current is held between 20mA and 65mA. Thus the resistor value is determined by the following equation:  $R = \frac{(V_{SUPPLY} - 3.7)}{I_{CC}}$ <p>Care should also be taken in the resistor selection to ensure that the current into the part never exceeds 65 mA over the planned operating temperature. This means that a resistor between the supply and this pin is always required, even if a supply near 3.7V is available. Because DC is present on this pin, a DC blocking capacitor, suitable for the frequency of operation, should be used in most applications. The supply side of the bias network should also be well bypassed.</p>	

## Application Schematic



## Evaluation Board Schematic

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



## Evaluation Board Layout 1.27" x 1.02"

