



RF2308

GENERAL PURPOSE AMPLIFIER

Typical Applications

- General Purpose Broadband 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 RF2308 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 4000MHz. The device is self-contained with 50Ω input and output impedances and requires only two external DC biasing elements to operate as specified.

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: SOP-8

Features

- DC to 4000MHz Operation
- Internally matched Input and Output
- 12dB Small Signal Gain
- 5dB Noise Figure
- 20mW Linear Output Power
- Single Positive Power Supply

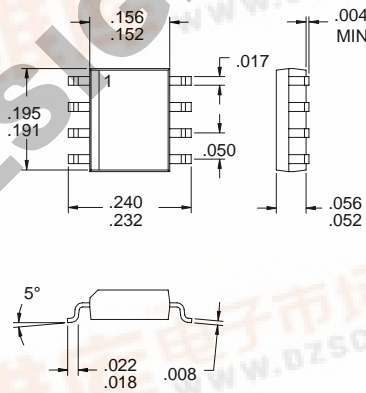
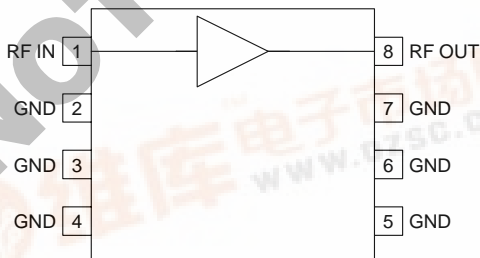
Ordering Information

RF2308	General Purpose Amplifier
RF2308 PCBA	Fully Assembled Evaluation Board

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Functional Block Diagram



RF2308

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.

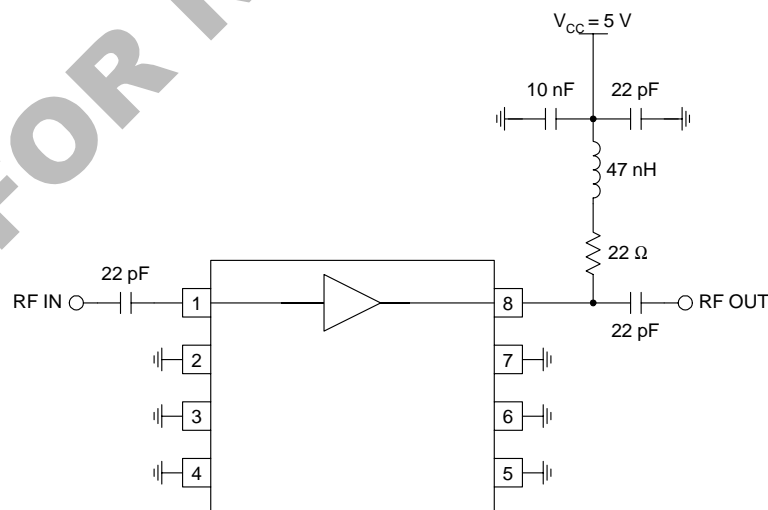
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GENERAL PURPOSE
AMPLIFIERS

Parameter	Specification			Unit	Condition
	Min.	Typ.	Max.		
Overall					T=25 °C, V _{CC} =4.3V, R _C =22Ω, Freq=1000MHz
Frequency Range		DC to 4000		MHz	
Gain	10 10.2	11.7 11.9	12.5 12.7	dB	Freq=1000MHz
Noise Figure		5		dB	Freq=100MHz
Input VSWR		<2:1			
Output VSWR		<2:1			
Output IP ₃		+23		dBm	
Output P _{1dB}		+13		dBm	
Saturated Output Power		+15		dBm	
Reverse Isolation		> 15		dB	
Power Supply					
Operating Voltage		3.7		V	At pin 8
Operating Current	28	35	42	mA	V _{CC} =4.3V, R _C =22Ω
Operating Current Range		20 to 65		mA	

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	<p>RF output and bias pin. Biasing is accomplished with an external series resistor and choke inductor to V_{CC}. The resistor is chosen 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 20 and 65 mA. Thus the resistor value is determined by the following equation:</p> $R = \frac{(V_{SUPPLY} - 3.7)}{I_{CC}}$ <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>	

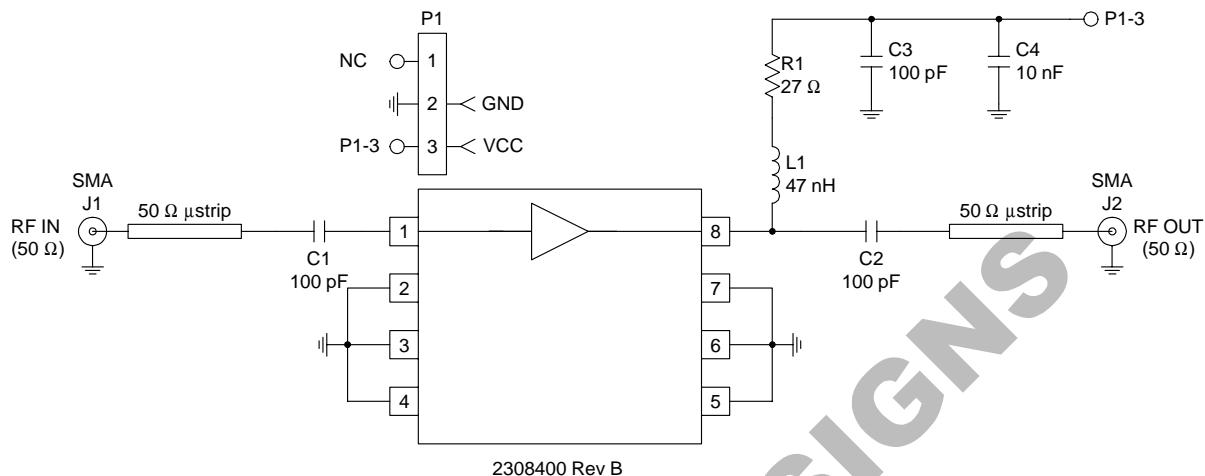
Application Schematic



RF2308

Evaluation Board Schematic

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



Evaluation Board Layout
Uses same board as RF2306
1.27" x 1.02"

