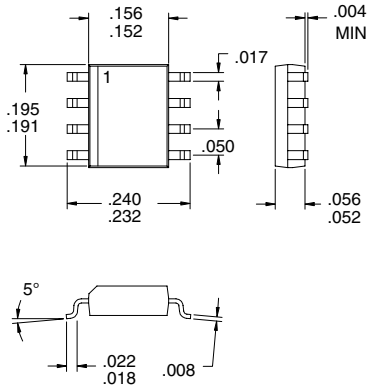
Typical Applications

- General Purpose High Bandwidth Gain Blocks
- IF or RF Buffer Amplifiers
- Broadband Test Equipment
- Final PA for Medium Power Applications
- Driver Stage for Power Amplifiers

Product Description

The RF2311 is a general purpose, low cost low power 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 1600MHz. The gain flatness and high bandwidth make the device suitable for many other applications as well. The device is self-contained with 50Ω input and output impedances, and no external DC biasing elements are required to operate as specified.



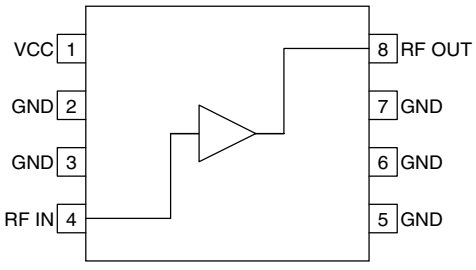
Package Style: SOP-8

Optimum Technology Matching® Applied

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

Features

- DC to well over 1600MHz Operation
- Internally Matched Input and Output
- 14dB Small Signal Gain
- 4.2dB Noise Figure
- +9dBm Output Power
- Single 2.7V to 6V Positive Power Supply



Functional Block Diagram

Ordering Information

RF2311	General Purpose Amplifier
RF2311 PCBA	Fully Assembled Evaluation Board

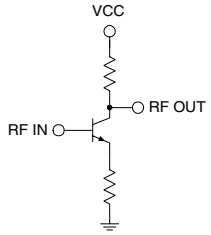
RF Micro Devices, Inc.
7625 Thorndike Road
Greensboro, NC 27409, USA
Tel (336) 664 1233
Fax (336) 664 0454
http://www.rfmd.com

Absolute Maximum Ratings

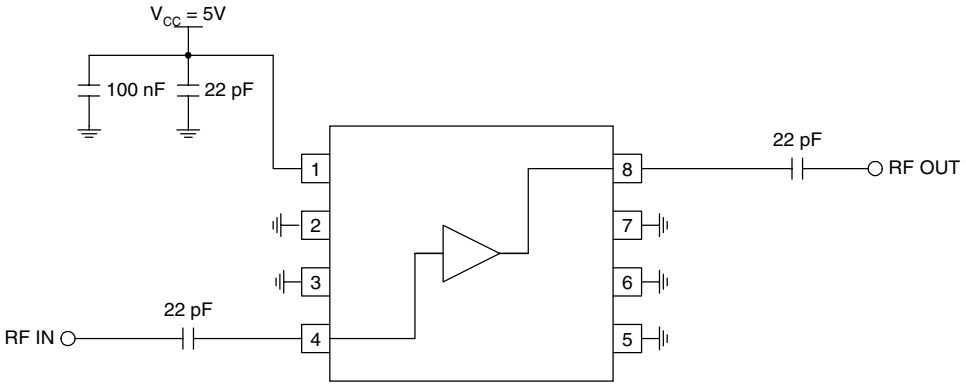
Parameter	Rating	Unit
Supply Voltage	-0.5 to +6	V_{DC}
Input RF Power	+10	dBm
Operating Ambient Temperature	-40 to +85	°C
Storage Temperature	-40 to +150	°C

Caution! ESD sensitive device.

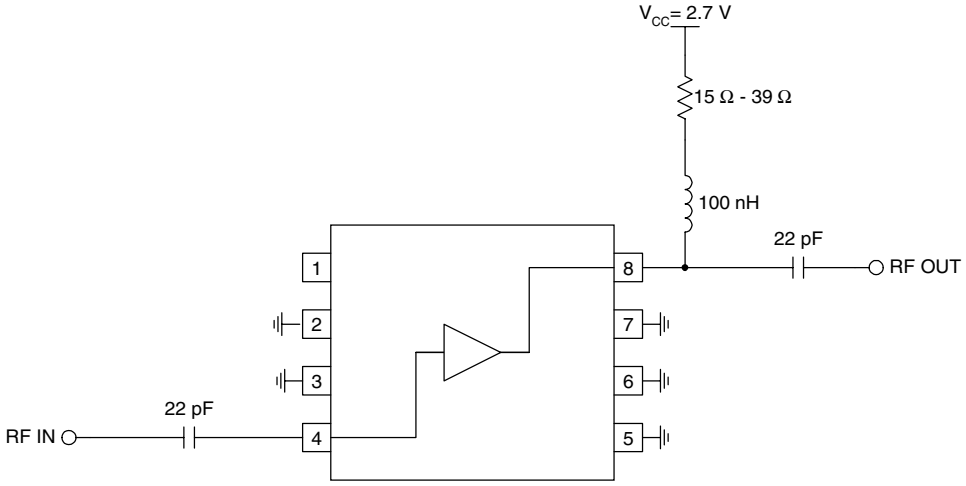
Parameter	Specification			Unit	Condition
	Min.	Typ.	Max.		
Overall					T=25 °C, V_{CC}=5V, Freq=900MHz
Frequency Range		DC to 1600		MHz	3dB Bandwidth
Gain	12	14	16	dB	V_{CC}=5V
		13		dB	V_{CC}=3.6V
Noise Figure		4.2		dB	V_{CC}=5V
		4.0		dB	V_{CC}=3.6V
Input VSWR		<1.5:1			
Output VSWR		<1.3:1			300MHz to 1200MHz
Output IP_3	+14	+16		dBm	900MHz, V_{CC}=5V
		+8		dBm	900MHz, V_{CC}=3.6V
Saturated Output Power	+8	+9		dBm	900MHz, V_{CC}=5V
		+1		dBm	900MHz, V_{CC}=3.6V
Reverse Isolation		20		dB	
Power Supply					
Operating Voltage		2.7 to 6		V	
Operating Current Range	12	17	21	mA	V_{CC}=5V
		8	11	mA	V_{CC}=3.6V

Pin	Function	Description	Interface Schematic
1	VCC	Power supply pin. An external bypass capacitor is recommended. The total supply current is shared between this pin and pin 8 (through the inductor).	See pin 8.
2	GND	Ground connection. Keep traces physically short and connect immediately to ground plane for best performance.	
3	GND	Same as pin 2.	
4	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.	See pin 8.
5	GND	Same as pin 2.	
6	GND	Same as pin 2.	
7	GND	Same as pin 2.	
8	RF OUT	RF output pin. Because DC is present on this pin, a DC blocking capacitor, suitable for the frequency of operation, should be used in most applications. The DC voltage on this pin is typically 2.4V. Alternatively, power supply may be connected to this pin. A series resistor and inductor should be used, in which case the L should be large enough to present a high impedance at the lowest operating frequency, and the R should be (V_{CC} - 2.4) / I, where I is the desired device current (between 8mA and 20mA).	

Application Schematic 5V Supply Voltage

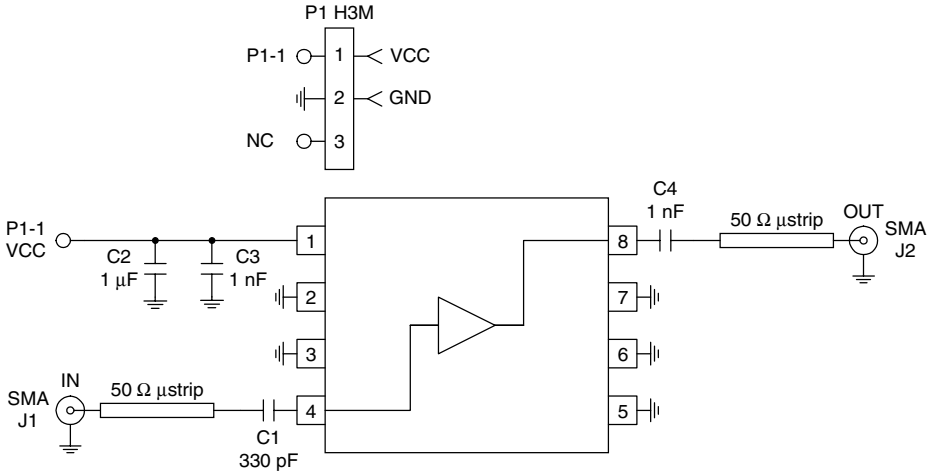


Application Schematic 2.7V Supply Voltage



Evaluation Board Schematic

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



Drawing 2311400 Rev B

Evaluation Board Layout
2” x 2”