

RoHS Compliant & Pb-Free Product
Package Style: SOT89

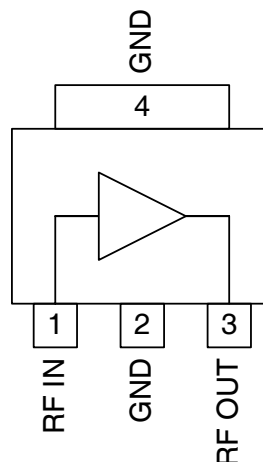


Features

- DC to >6000 MHz Operation
- Internally Matched Input and Output
- 12dB Small Signal Gain
- +26dBm Output IP3
- +13dBm Output P1dB

Applications

- Basestation Applications
- Broadband, Low-Noise Gain Blocks
- IF or RF Buffer Amplifiers
- Driver Stage for Power Amplifiers
- Final PA for Low-Power Applications
- High Reliability Applications



Functional Block Diagram

Product Description

The RF3378 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 6000MHz. The device is self-contained with 50Ω input and output impedances and requires only two external DC-biasing elements to operate as specified.

Ordering Information

RF3378	General Purpose Amplifier
RF337XPCBA-41X	Fully Assembled Evaluation Board

Optimum Technology Matching® Applied

- | | | | |
|----------------------------------------------|--------------------------------------|-------------------------------------|-----------------------------------|
| <input checked="" type="checkbox"/> GaAs HBT | <input type="checkbox"/> SiGe BiCMOS | <input type="checkbox"/> GaAs pHEMT | <input type="checkbox"/> GaN HEMT |
| <input type="checkbox"/> GaAs MESFET | <input type="checkbox"/> Si BiCMOS | <input type="checkbox"/> Si CMOS | |
| <input type="checkbox"/> InGaP HBT | <input type="checkbox"/> SiGe HBT | <input type="checkbox"/> Si BJT | |

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Absolute Maximum Ratings

Parameter	Rating	Unit
Input RF Power	+13	dBm
Operating Ambient Temperature	-40 to +85	°C
Storage Temperature	-60 to +150	°C
I _{CC}	60	mA



Caution! ESD sensitive device.

Exceeding any one or a combination of the Absolute Maximum Rating conditions may cause permanent damage to the device. Extended application of Absolute Maximum Rating conditions to the device may reduce device reliability. Specified typical performance or functional operation of the device under Absolute Maximum Rating conditions is not implied.

RoHS status based on EUDirective2002/95/EC (at time of this document revision).

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Parameter	Specification			Unit	Condition
	Min.	Typ.	Max.		
Overall					T=25 °C, I _{CC} =40mA (See Note 1.)
Frequency Range		DC to >6000		MHz	
3dB Bandwidth		6		GHz	
Gain	11.6	12.6		dB	Freq=500MHz
	11.5	12.5		dB	Freq=1000MHz
	11.0	12.0		dB	Freq=2000MHz
		11.5		dB	Freq=3000MHz (See Note)
		11.2		dB	Freq=4000MHz (See Note)
		11.3		dB	Freq=6000MHz (See Note)
Noise Figure		3.7		dB	Freq=2000MHz
Input VSWR		<1.75:1			In a 50Ω system, DC to 6000MHz
Output VSWR		<1.77:1			In a 50Ω system, DC to 6000MHz
Output IP ₃	+25.0	+26.0		dBm	Freq=2000MHz
Output P _{1dB}	+12.0	+13.0		dBm	Freq=2000MHz
Reverse Isolation		16.5		dB	Freq=2000MHz
Thermal					I _{CC} =40mA, P _{DISS} =147mW. (See Note 3.)
Theta _{JC}		121		°C/W	
Maximum Measured Junction Temperature at DC Bias Conditions		103		°C	T _{CASE} =+85 °C
Mean Time To Failures		70,000		years	T _{CASE} =+85 °C
Power Supply					With 22Ω bias resistor
Device Operating Voltage		3.9	4.0	V	At pin 8 with I _{CC} =40mA
		4.8	5.1	V	At evaluation board connector, I _{CC} =40mA
Operating Current		40	60	mA	See Note 2.

Note 1: All specification and characterization data has been gathered on standard FR-4 evaluation boards. These evaluation boards are not optimized for frequencies above 2.5GHz. Performance above 2.5GHz may improve if a high performance PCB is used.

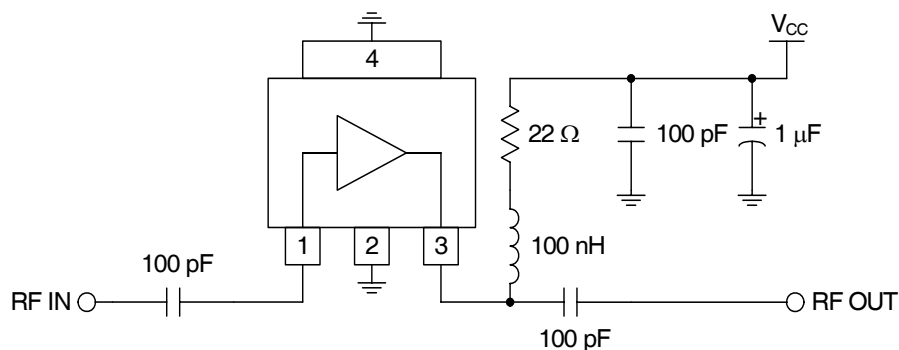
Note 2: The RF3378 must be operated at or below 60mA in order to achieve the thermal performance listed above. While the RF3378 may be operated at higher bias currents, 40mA is the recommended bias to ensure the highest possible reliability and electrical performance.

Note 3: Because of process variations from part to part, the current resulting from a fixed bias voltage will vary. As a result, caution should be used in designing fixed voltage bias circuits to ensure the worst case bias current does not exceed 60mA over all intended operating conditions.

Dimensions in mm.

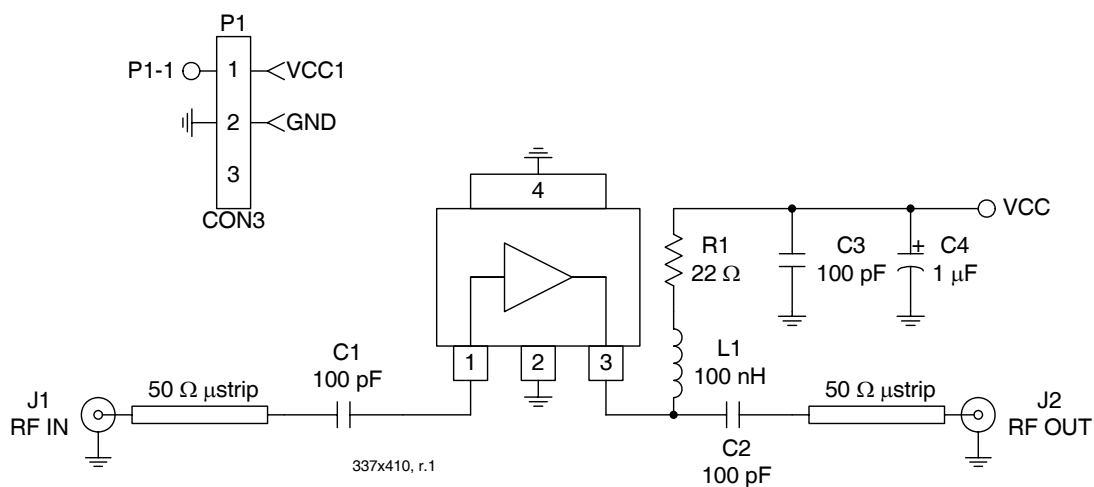
Shaded lead is pin 1.

Application Schematic



Evaluation Board Schematic

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



Evaluation Board Layout
Board Size 1.195" x 1.000"
Board Thickness 0.033", Board Material FR-4

