rfmd.com

RF2360

LINEAR GENERAL PURPOSE AMPLIFIER

RoHS Compliant & Pb-Free Product Package Style: Standard Batwing

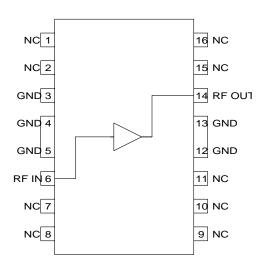


Features

- 5 MHz to 1500 MHz Operation
- Internally Matched Input and Output
- 20dB Small Signal Gain
- 1.2dB Noise Figure
- +24dBm Output Power
- Single 6V to 9V Positive Power Supply

Applications

- CATV Distribution Amplifiers
- Cable Modems
- Broadband Gain Blocks
- Laser Diode Driver
- Return Channel Amplifier
- Base Stations



Functional Block Diagram

Product Description

The RF2360 is a general purpose, low-cost, high-linearity RF amplifier IC. The device is manufactured on a Gallium Arsenide process and is featured in an SOP-16 batwing package. It has been designed for use as an easily cascadable 75Ω gain block with a Noise Figure of less than 2dB. Gain flatness better than 0.5dB from 5MHz to 1000MHz, and high linearity make this part ideal for cable TV applications. Other applications include IF and RF amplification in wireless voice and data communication products operating in frequency bands up to 1000MHz. The device is self-contained with 75Ω input and output impedances providing less than 2:1 VSWR matching. For higher input and output return losses, see the evaluation schematic.

Ordering Information

RF2360	Linear General Purpose Amplifier
RF2360 PCBA	Fully Assembled Evaluation Board 50Ω
RF2360 411	Fully Assembled Evaluation Board 75H
RF2360 412	Fully Assembled Evaluation Board 75L

Optimum Technology Matching® Applied

☐ GaAs HBT ☑ GaAs MESFET	☐ SiGe BiCMOS	☐ GaAs pHEMT	☐ GaN HEMT
☑ GaAs MESFET	☐ Si BiCMOS	☐ Si CMOS	
☐ InGaP HBT	☐ SiGe HBT	☐ Si BJT	



Absolute Maximum Ratings

Parameter	Rating	Unit
Device Current	175	mA
Device Voltage	9	V
Input RF Power	+13	dBm
Output Load VSWR	20:1	
Ambient Operating Temperature	-40 to +85	°C
Storage Temperature	-40 to +150	°C



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 EU Directive 2002/95/EC (at time of this document revision).

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Dovemeter		Specification			Condition	
Parameter	Min.	Тур.	Max.	Unit	Condition	
Overall (50 Ω)					T=25 ° C, V _{DD} =7V, 50Ω System, P _{IN} =-8dBm	
Frequency Range	5		1500	MHz	3dB Bandwidth	
Input VSWR		1.6:1			Appropriate values for the output DC blocking capacitor and bias inductor are required to maintain this VSWR over the intended operating frequency range.	
Output VSWR		1.2:1			See note for Input VSWR.	
Gain		20		dB	At 500MHz	
Gain Flatness		+/-0.9		dB	5MHz to 1000MHz	
Noise Figure		1.2		dB	At 500 MHz	
Noise Figure		1.5		dB	From 5MHz to 1000MHz	
Output IP ₃		33.7		dBm	At 10 MHz, Delta F1 and F2 = 1MHz	
Output IP ₃		37.2		dBm	At 500MHz	
Output IP ₃		36.4		dBm	At 1000MHz	
Output IP ₂		46.3		dBm	At 100MHz, Delta F1 and F2 = 156MHz	
Output IP ₂		44.4		dBm	At 1000MHz	
Output P _{1dB}		21		dBm	At 10MHz	
Output P _{1dB}		24		dBm	At 500MHz	
Output P _{1dB}		23.7		dBm	At 1000MHz	
Reverse Isolation		24		dB	At 500MHz	
					T=25 ° C, V _{DD} =9V, P _{IN} =-8dBm	
Gain		20		dB	At 500MHz	
Gain Flatness		+/-0.9		dB	5MHz to 1000MHz	
Noise Figure		1.1		dB	At 500MHz	
Noise Figure		1.5		dB	From 5MHz to 1000MHz,	
Output IP ₃		34.8		dBm	At 10 MHz, Delta F1 and F2 = 1MHz	
Output IP ₃		38.1		dBm	At 500MHz	
Output IP ₃		38.7		dBm	At 1000MHz	
Output IP ₂		44.1		dBm	At 100MHz, Delta F1 and F2 = 156MHz	
Output IP ₂		48.6		dBm	At 1000MHz	
Output P _{1dB}		22.5		dBm	At 10MHz	
Output P _{1dB}		25.1		dBm	At 500MHz	
Output P _{1dB}		25.3		dBm	At 1000MHz	
Power Supply						
Supply Voltage (V _{DD})	6	7	9	V		



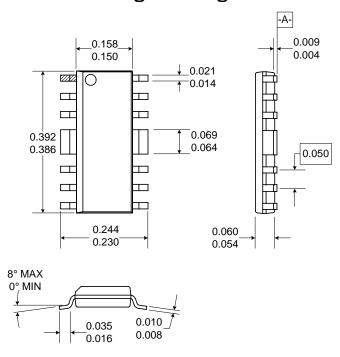
Davamatav		Specification			Condition	
Parameter	Min.	Тур.	Max.	Unit	Condition	
Overall (75 Ω)					T=25°C, V_{DD} =7V, 75 Ω System, P_{IN} =-8dBm	
Frequency Range	5		1500	MHz	3dB Bandwidth	
Input VSWR		1.6:1			Appropriate values for the output DC blocking capacitor and bias inductor are required to maintain this VSWR over the intended operating frequency range.	
Output VSWR		1.3:1			See note for input VSWR.	
Gain		20		dB	At 500MHz	
Gain Flatness		<u>+</u> 0.5		dB	5MHz to 1000MHz	
Output IP ₃		36.8		dBm	At 50 MHz, Delta F1 and F2 = 1 MHz	
		36.0		dBm	At 500MHz	
Output IP ₂		50.1		dBm	At 500 MHz, Delta F1 and F2 = 55.25 MHz	
Output IP _{1dB}		21		dBm	At 10 MHz	
		23		dBm	At 500MHz	
		22		dBm	At 1000 MHz	
Operating Current Range	100	104	109	mA		
110 Channels					10 dBmV per channel, flat, at the input of the amplifier; V_{CC} =7V, I_{CC} =120mA	
СТВ		-75		dBc	At 55.25MHz	
		-77		dBc	At 331.25MHz	
		-75		dBc	At 547.25 MHz	
CSO+1.25MHz		-91		dBc	At 55.25MHz	
		-60		dBc	At 331.25 MHz	
		-57		dBc	At 547.25MHz	
CSO-1.25 MHz		-55		dBc	At 55.25 MHz	
		-54		dBc	At 331.25MHz	
		-56		dBc	At 547.25 MHz	
CNR		+66		dB	At 55.25 MHz	
		+65		dB	At 331.25 MHz	
		+65		dB	At 547.25 MHz	
Power Supply						
Supply Voltage (V _{DD})	6	7	9	V		
Operating Current Range	115	120	130	mA		



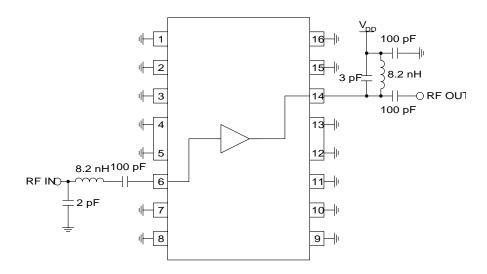
Pin	Function	Description	Interface Schematic
1	NC	No connection. This pin should be connected to the ground plane.	
2	NC	Same as pin 1.	
3	GND	Ground connection. Keep traces physically short and connect immediately to ground plane for best performance. Each ground pin should have a via to the ground plane.	
4	GND	Same as pin 3.	
5	GND	Same as pin 3.	
6	RF IN	RF input pin. This pin is internally DC blocked. An external DC blocking capacitor is not required.	
7	NC	Same as pin 1.	
8	NC	Same as pin 1.	
9	NC	Same as pin 1.	
10	NC	Same as pin 1.	
11	NC	Same as pin 1.	
12	GND	Same as pin 3.	
13	GND	Same as pin 3.	
14	RF OUT	RF output and bias pin. Because DC is present on this pin, a DC blocking capacitor, suitable for the frequency of operation, should be used in most applications. For biasing, only an RF choke is needed.	RF INO
15	NC	Same as pin 1.	
16	NC	Same as pin 1.	



Package Drawing

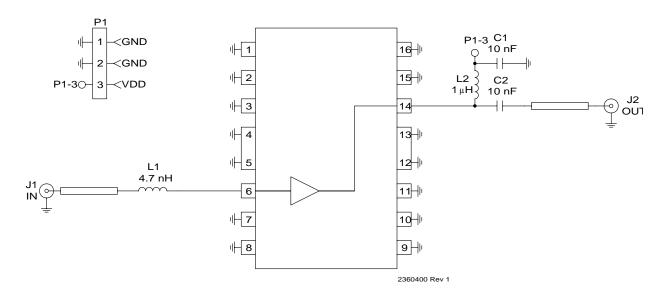


Application Schematic 869-894 MHz Narrowband Operation



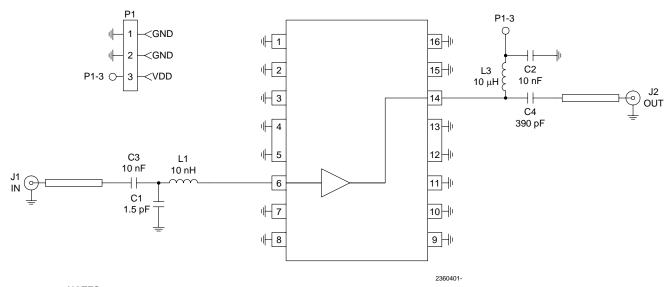


Evaluation Board Schematic - 50Ω



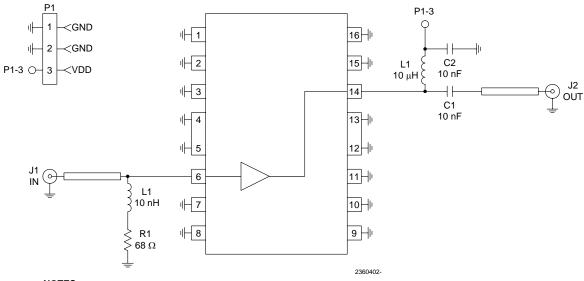


Evaluation Board Schematic - 75 Ω High Frequency (50 MHz to 2000 MHz)



NOTES: J1 and J2 are 75 Ω F connectors.

Evaluation Board Schematic - 75 Ω Low Frequency (5MHz to 200MHz)

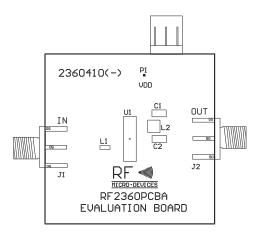


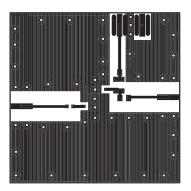
NOTES: J1 and J2 are 75 Ω F connectors.



Evaluation Board Layout - 50Ω Board Size 1.5" x 1.5"

Board Thickness 0.031", Board Material FR-4





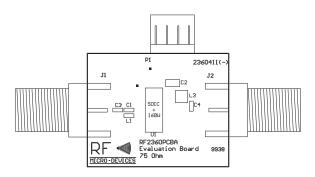


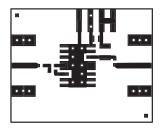


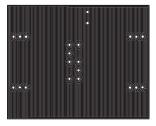
Evaluation Board Layout - 75 Ω High Frequency (50 MHz to 2000 MHz)

Board Size 1.25" x 1.0"

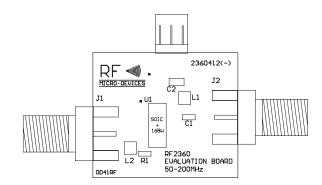
Board Thickness 0.062", Board Material FR-4

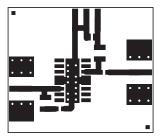


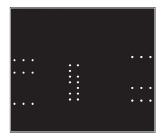




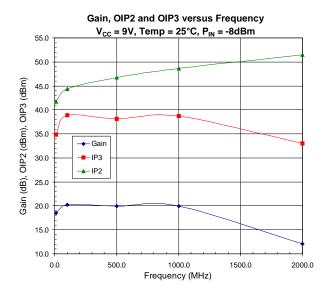
Evaluation Board Layout - 75 Ω Low Frequency (5MHz to 200MHz)

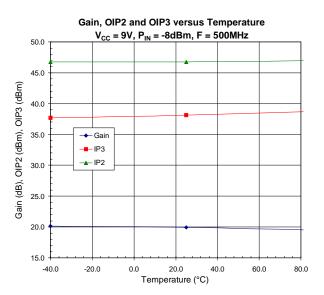


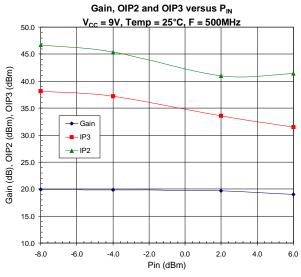




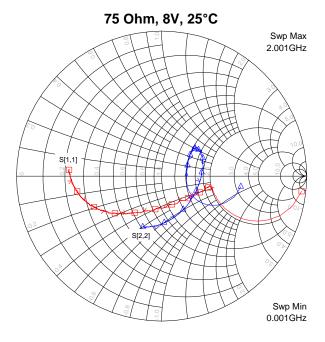


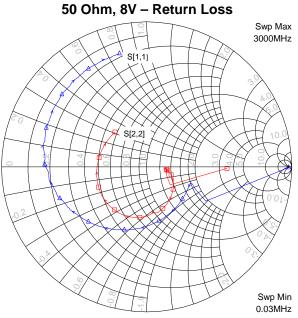


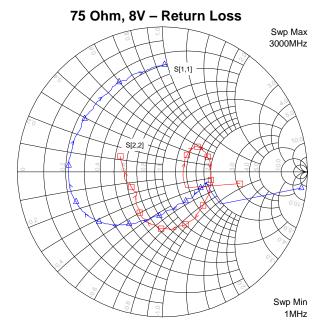














RoHS* Banned Material Content

RoHS Compliant: yes
Package total weight in gram
Compliance Date Code:
0435
Bill of Materials Revision:
Pb Free Category:
e3

Bill of Materials	Parts Per Million (PPM)							
	Pb	Cd	Hg	Cr VI	PBB	PBDE		
Die	0	0	0	0	0	0		
Molding Compound	0	0	0	0	0	0		
Lead Frame	0	0	0	0	0	0		
Die Attach Epoxy	0	0	0	0	0	0		
Wire	0	0	0	0	0	0		
Solder Plating	0	0	0	0	0	0		

This RoHS banned material content declaration was prepared solely on information, including analytical data, provided to RFMD by its suppliers, and applies to the Bill of Materials (BOM) revision noted

^{*} DIRECTIVE 2002/95/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment