

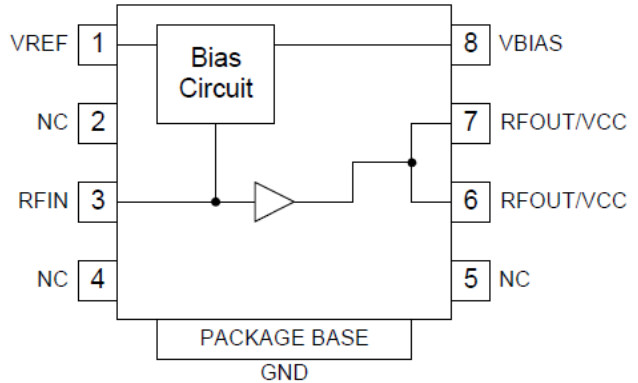


Features

- High Linearity: OIP3=49dBm (880MHz)
- Low Noise: NF=3.1dB (2140MHz)
- P1dB>29dBm
- 400MHz to 2700MHz Operation
- Thermally Enhanced Slug Package

Applications

- GaAs Pre-Driver for Base Station Amplifiers
- PA Stage for Commercial Wireless Infrastructure
- Class AB Operation for DCS, PCS, UMTS, LTE, and WLAN Transceiver Applications
- 2nd/3rd Stage LNA for Wireless Infrastructure



Functional Block Diagram

Product Description

The RFPA3809 is a GaAs HBT linear power amplifier specifically designed for Wireless Infrastructure applications. Using a highly reliable GaAs HBT fabrication process, this high performance single-stage amplifier achieves ultra-high linearity over a broad frequency range. It also offers low noise figure making it an excellent solution for 2nd and 3rd stage LNAs. The RFPA3809 also exhibits excellent thermal performance through the use of a thermally-enhanced plastic surface-mount slug package.

Ordering Information

RFPA3809SQ	Sample Bag with 25 pieces
RFPA3809SR	7" Reel with 100 pieces
RFPA3809TR7	7" Reel with 750 pieces
RFPA3809TR13	13" Reel with 2500 pieces
RFPA3809PCK-410	869MHz to 894MHz PCBA with 5-piece Sample Bag
RFPA3809PCK-411	2110MHz to 2170MHz PCBA with 5-piece Sample Bag

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"/> BIFET HBT |
| <input type="checkbox"/> InGaP HBT | <input type="checkbox"/> SiGe HBT | <input type="checkbox"/> Si BJT | <input type="checkbox"/> LDMOS |

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Absolute Maximum Ratings

Parameter	Rating	Unit
Supply Voltage (V_{CC} and V_{BIAS})	6.5	V
Reference Current (I_{REF})	5	mA
DC Supply Current (I_C)	768	mA
CW Input Power, 2:1 Output VSWR	26	dBm
Output Load VSWR at P3dB	5:1	
Operating Junction Temperature	160	°C
Operating Temperature Range (T_L)	-40 to +85	°C
Storage Temperature	-55 to +150	°C
ESD Rating: Human Body Model	Class 1B	
Moisture Sensitivity Level	MSL 2	



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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- Notes: 1. The maximum ratings must all be met simultaneously.
 2. $P_{diss} = P_{DC} + P_{RFIN} - P_{RFOUT}$
 3. $T_j = T_L + P_{diss} * R_{th}$

Parameter	Specification			Unit	Condition
	Min.	Typ.	Max.		
869 MHz to 894 MHz					
Frequency	869	880	894	MHz	$V_{CC}=5.0V, V_{BIAS}=5.0V, I_{CQ}=275mA$
Input Power (P_{IN})			18	dBm	Max recommended, $V_{CC} < 6.0V$
Gain (S21)		17		dB	
OIP3		49		dBm	15 dBm/tone, tone spacing=1 MHz
P1dB		29		dBm	
Efficiency at P3dB		58		%	At P3dB, EVB tuned for linear operation
Input Return Loss (S11)		16		dB	
Output Return Loss (S22)		18		dB	
Noise Figure		3.9		dB	
WCDMA Ch Power at -65 dBc ACPR		17		dBm	3GPP 3.5, Test Model 1, 64 DPCH
WCDMA Ch Power at -55 dBc ACPR		19.3		dBm	3GPP 3.5, Test Model 1, 64 DPCH
UMTS2100					
Frequency	2110	2140	2170	MHz	$V_{CC}=5.0V, V_{BIAS}=5.0V, I_{CQ}=275mA$
Input Power (P_{IN})			20	dBm	Max recommended, $V_{CC} < 6.0V$
Gain (S21)		12.4		dB	
OIP3		47		dBm	15 dBm/tone, tone spacing=1 MHz
P1dB		29		dBm	
Efficiency at P3dB		50		%	At P3dB, EVB tuned for linear operation
Input Return Loss (S11)		17		dB	
Output Return Loss (S22)		15		dB	
Noise Figure		3.1		dB	
WCDMA Ch Power at -65 dBc ACPR		16.5		dBm	3GPP 3.5, Test Model 1, 64 DPCH
WCDMA Ch Power at -55 dBc ACPR		19		dBm	3GPP 3.5, Test Model 1, 64 DPCH
Power Supply					
Operating Current (Quiescent)	200	275	350	mA	At $V_{CC}=5.0V$
Operating Voltage (V_{CC})		5.0	6.0	V	Max recommended collector voltage
Thermal Resistance (R_{TH})		41		C/W	At quiescent current, no RF
Power Down Current			20	uA	At $V_{REF}=0V$