RF2324

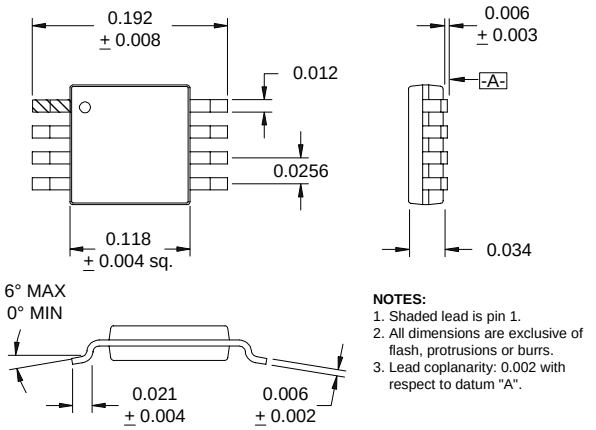
PCS CDMA/TDMA 3V
PA DRIVER AMPLIFIER

Typical Applications

- TDMA/CDMA/FM PCS Tx Amplifier
- Low Noise Transmit Driver Amplifier
- 2.4GHz WLAN Systems
- ISM Band LNA/Driver
- General Purpose Amplification
- Commercial and Consumer Systems

Product Description

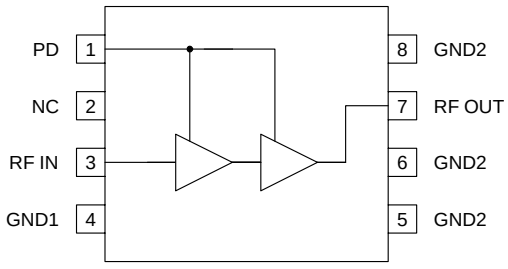
The RF2324 is a low noise CDMA/TDMA PA driver amplifier with a very high dynamic range designed for transmit digital PCS applications at 1880MHz. The device functions as an outstanding PA driver amplifier in the transmit chain of digital subscriber units where low transmit noise power is a concern. The IC includes a power down feature that can be used to completely turn off the device. The IC is featured in a standard miniature 8-lead plastic MSOP package.



Package Style: MSOP-8

Optimum Technology Matching® Applied

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



Functional Block Diagram

Features

- Low Noise and High Intercept Point
- Power Down Control
- Single 2.5V to 6.0V Power Supply
- 150MHz to 2500MHz Operation
- Extremely Small MSOP-8 Package

Ordering Information

RF2324	PCS CDMA/TDMA 3V PA Driver Amplifier
RF2324 PCBA	Fully Assembled Evaluation Board

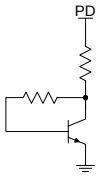
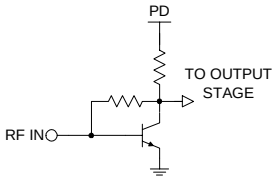
RF Micro Devices, Inc.
7628 Thorndike Road
Greensboro, NC 27409, USA
Tel (336) 664 1233
Fax (336) 664 0454
http://www.rfmd.com

Absolute Maximum Ratings

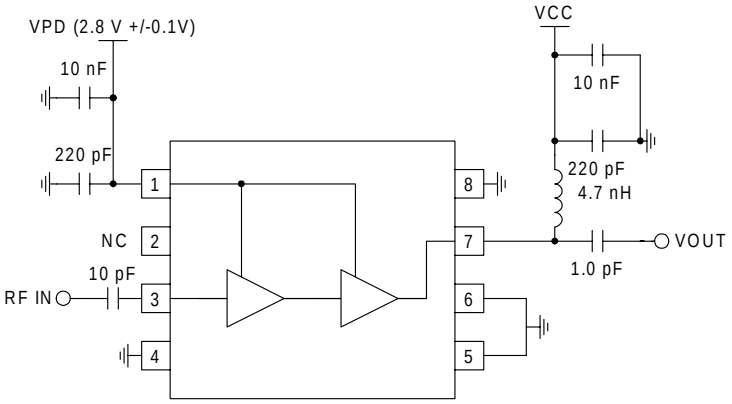
Parameter	Rating	Unit
Supply Voltage	-0.5 to +8.0	V_{DC}
Input RF Level	+10	dBm
Operating Ambient Temperature	-40 to +85	°C
Storage Temperature	-40 to +150	°C

Caution! ESD sensitive device.

Parameter	Specification			Unit	Condition
	Min.	Typ.	Max.		
Overall					
RF Frequency Range		150 to 2500		MHz	
1880 MHz Performance					Schematic per Evaluation Board, T = 25°C, RF=1880 MHz, V_{PD}=2.8 V
Gain	21	22	23	dB	V_{CC}=3.5V
	21	22	23	dB	V_{CC}=3.0V
	21	22	23	dB	V_{CC}=2.5V
Output IP3	+26	+28	+35	dBm	V_{CC}=3.5V
		+26		dBm	V_{CC}=3.0V
		+25		dBm	V_{CC}=2.5V
Noise Figure		1.8	2.5	dB	V_{CC}=3.5V
		1.8	2.5	dB	V_{CC}=3.0V
		1.8	2.5	dB	V_{CC}=2.5V
Reverse Isolation		36		dB	V_{CC}=3.5V
		36		dB	V_{CC}=3.0V
		35		dB	V_{CC}=2.5V
Input VSWR		1.3:1	2.0:1		
Output VSWR		1.25:1	2.0:1		Using External LC network used on Evaluation Board
P_{1dB}	14	16		dBm	V_{CC}=3.5V
	12.5	14.5		dBm	V_{CC}=3.0V
	11	13		dBm	V_{CC}=2.5V
Power Supply					T = 25 °C
Voltage (V_{CC})		2.5 to 6.0		V	
Voltage (V_{PD})	2.7	2.8	2.9	V	
Current Consumption	24	33	43	mA	V_{CC}=3.5V; V_{PD}=2.8 V; V_{PD}+ V_{CC} - Current Consumption from V_{PD} is 8.5 mA Typ. @ V_{PD} = 2.8V and 12 mA Max @ V_{PD} =2.9 V
	24	31	38	mA	V_{CC}=3.0V; V_{PD}=2.7V; V_{PD}+ V_{CC}
	29	36	43	mA	V_{CC}=2.5V; V_{PD}=2.9V; V_{PD}+ V_{CC}
- Power Down			10	µA	V_{CC}=3.5V; $V_{PD} \leq$ 0.9V

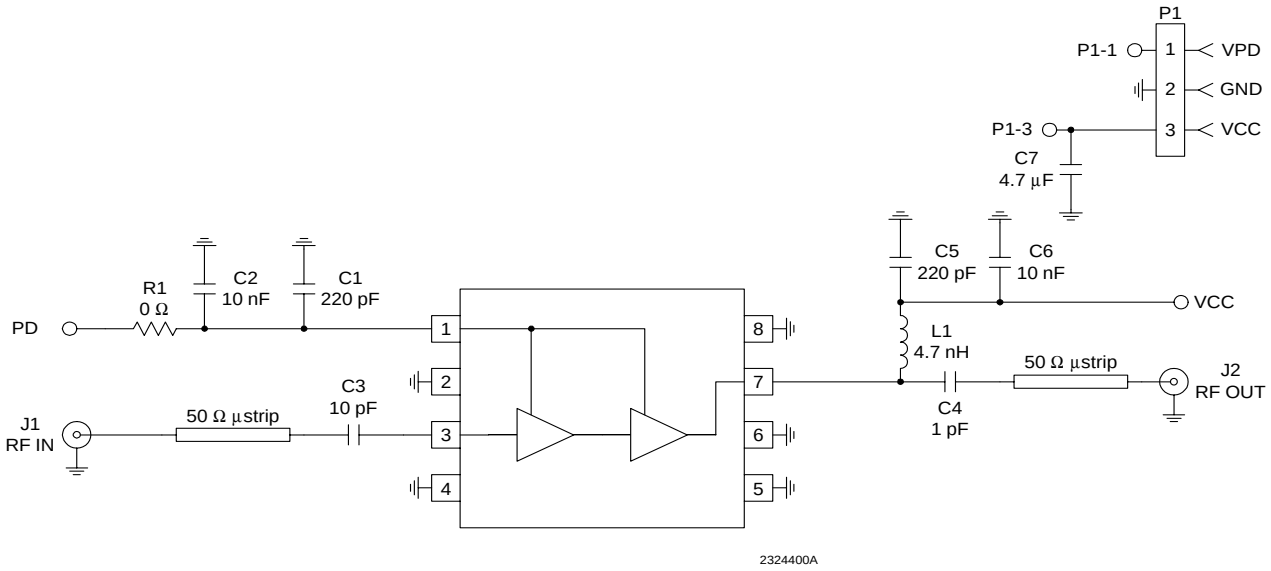
Pin	Function	Description	Interface Schematic
1	PD	Power down for the IC. V_{PD} = 2.8V +/- 0.1V turns on the part. V_{PD} < 0.9V turns off the Part. External RF bypassing is required. The trace length between the pin and the bypass capacitors should be minimized. The ground side of the bypass capacitors should connect immediately to ground plane. Nominal current required for V_{PD} = 2.8V is 8.5 mA typical and 12 mA Max (@ V_{PD} = 2.9 V).	
2	NC	No connection. This pin is typically left unconnected or grounded.	
3	RF IN	RF input pin. This pin is DC-coupled and matched to 50Ω at 1880 MHz.	
4	GND1	Ground connection. For best performance, keep traces physically short and connect immediately to ground plane.	
5	GND2	See pin 6.	
6	GND2	Ground connection. For best performance, keep traces physically short and connect immediately to ground plane.	
7	RF OUT	Amplifier Output pin. This pin is an open-collector output. It must be biased to either V_{CC} or pin 7 through a choke or matching inductor. This pin is typically matched to 50Ω with a shunt bias/matching inductor and series blocking/matching capacitor. Refer to application schematics.	
8	GND2	See pin 6.	

Application Schematic:
~1880 MHz Operation, Internal Collector Bias

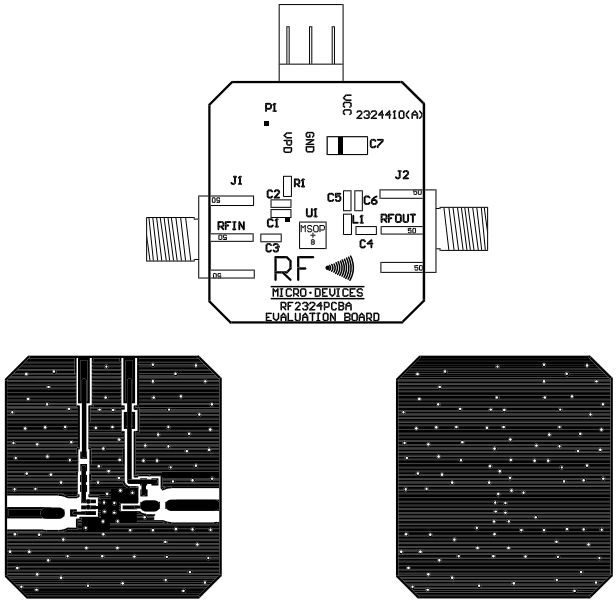


Evaluation Board Schematic

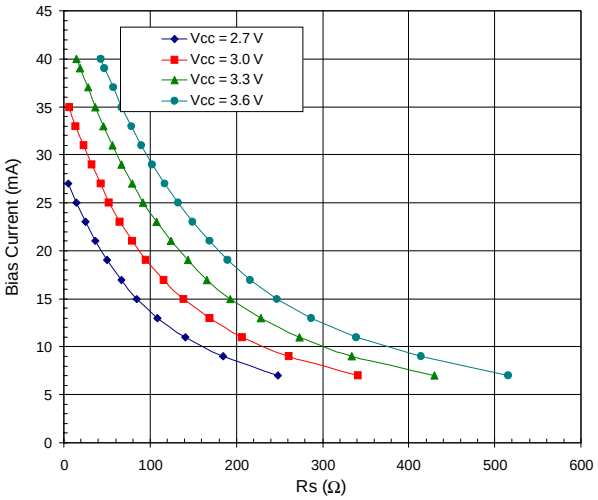
(Download Bill of Materials from www.rfmd.com.)



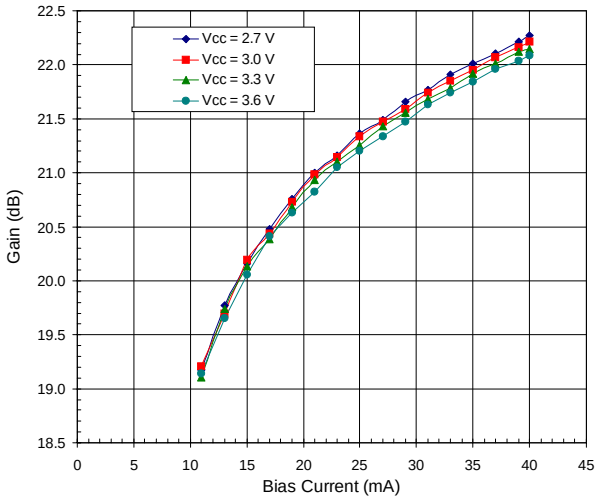
Evaluation Board Layout
Board Size 1” x 1”
Board Thickness 0.031”; Board Material FR-4; Multi-Layer



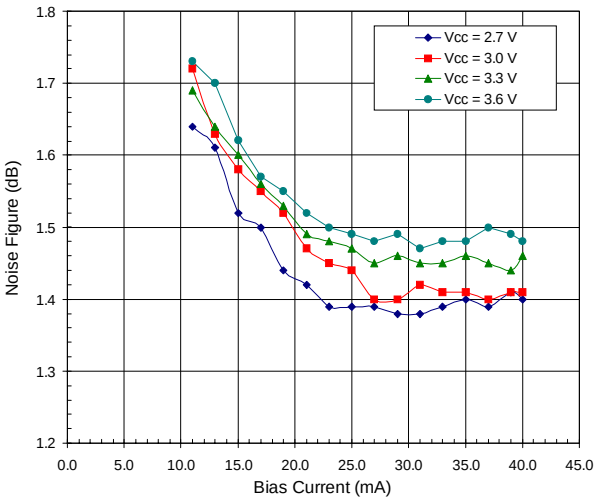
RF2324 Bias Current versus Rc



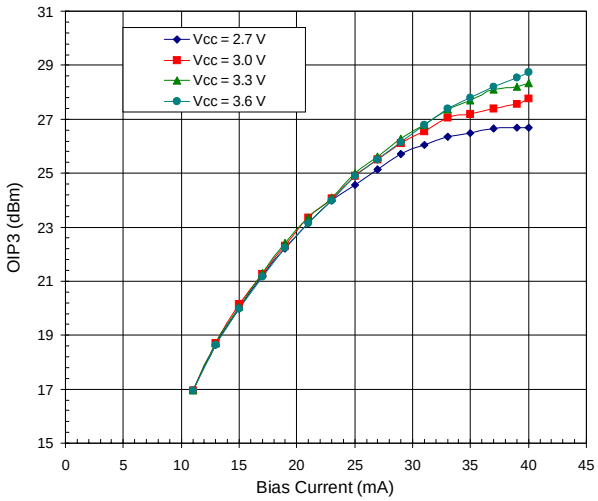
RF2324 Gain versus Bias Current



RF2324 Noise Figure versus Bias Current



RF2324 OIP3 versus Bias Current



RF2324 IIP3 versus Bias Current