

DATA SHEET

SA2410

**2.45GHz RF power amplifier and T/R
switch**

Preliminary specification

1997 Sept 09

IC17 Data Handbook

2.45GHz RF power amplifier and T/R switch

SA2410

DESCRIPTION

The SA2410 is a GaAs monolithic power amplifier with an integrated T/R switch designed to meet requirements for 802.11 (WLAN). The SA2410 uses an on-chip 4 GHz oscillator to generate the negative bias, thus eliminating the need for a negative supply. It operates from 3V to 5.5V and consumes 125 mA with an output power of 18.5 dB (typ). It is suitable for other 2.45 GHz ISM band applications.

FEATURES

- $V_{CC}=3V-5.5V$
- No negative bias needed
- $I_{CC}=125mA$ (typ) @ 3.3V
- $P_{OUT}=18.5$ dB(typ)
IM3<-30dBc
IM5<-50dBc
- Gain=29dB (typ)
- Attenuation range=16dB (typ)
- LQFP-32 package

APPLICATIONS

- 802.11 WLAN
- 2.4-2.5 GHz ISM BAND

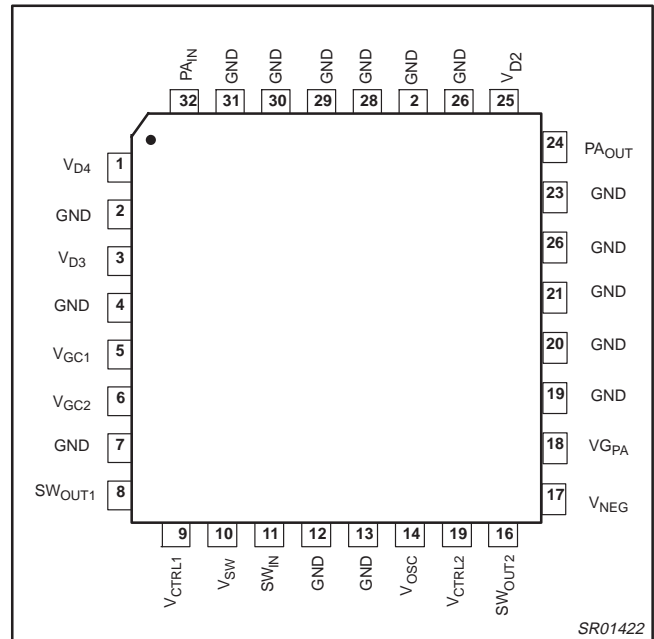


Figure 1. Pin Configuration

ORDERING INFORMATION

DESCRIPTION	TEMPERATURE RANGE	ORDER CODE	DWG #
32-Pin Plastic Thin Quad Flat Package	-40° C+85°C	SA2410	SOT401-1

GENERAL SPECIFICATIONS

Symbol	Parameter	Condition	Min	Typ	Max	Unit
T	Temperature		-40		+85	C
V_{CC}	Supply V		3		5.5	V
I_{CC}	Supply I	3.3 volts		125		mA
Power Amplifier						
f_{RF}	Frequency Range		2.4		2.5	GHz
IM3	IM3 2 tones		30			dBc
IM5	IM5 2 tones		50			dBc
T_{on}	Transmit power on	Including neg. supply			2	μs
T_{off}	Xmit power down				2	μs
Gain	Small signal gain			29		dB
P_{out}	Output power	IM3=30dBc IM5=50dBc 125mA@3.3 volts	17.5	18.5		dBm
Eff.	Efficiency			25		%
$\Delta Gt1$	Gain variation with temp	-40 to +85°C		± 3.5		dB
$\Delta Gt2$	Gain variation with temp	0-70°C		± 2.0		dB
ΔGr	Ripple	2.45 \pm 0.05 GHz		± 1		dB
ΔGvd	Gain variation with supply	3.3 volts \pm 0.3 V		0.5		dB

2.45GHz RF power amplifier and T/R switch

SA2410

Symbol	Parameter	Condition	Min	Typ	Max	Unit
Negative voltage supply						
t_{on}	Power on time		10		100	nS
	4 GHz spur	Xmit Mode		TBD		dBm
Linear Gain Control						
Symbol	Parameter	Condition	Min	Typ	Max	Unit
V_{GC}	Gain control voltage			TBD		Volt
C_{GC}	Input C at gain pin			TBD		pF
G_{CR}	Attenuation range			16		dB
Transmit/receive switch						
Symbol	Parameter	Condition	Min	Typ	Max	Unit
L_{tx}	Insertion loss T_x			1.3	2	dB
L_{rx}	Insertion loss R_x			1.3	2	dB
t_{sw}	Switch response time				400	nS
ISO_{PA}	Isolation switch to PA		30			dB
Z_{in}	Input impedance			50		Ω
Z_{out}	Output impedance			50		Ω
ISO_{SW}	Switch Isolation		17	19		dB

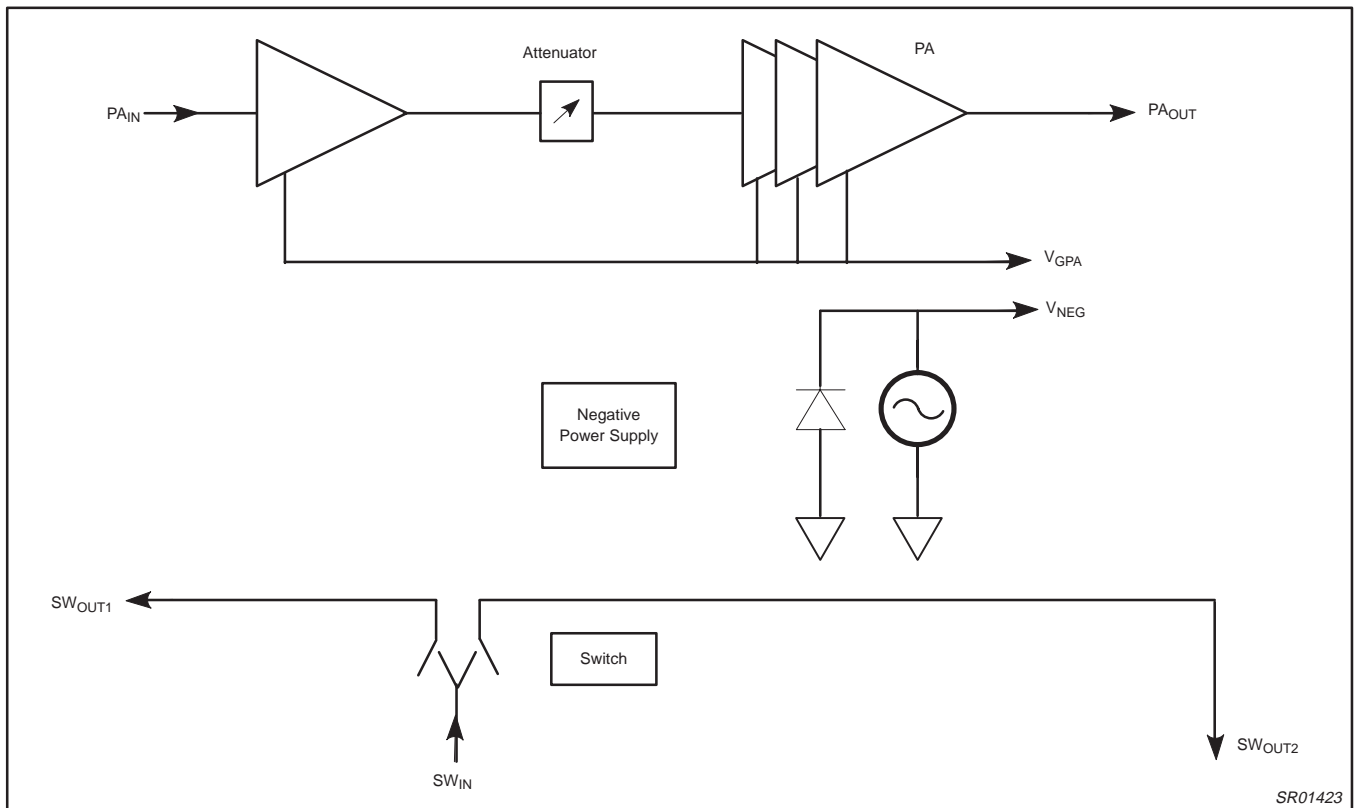


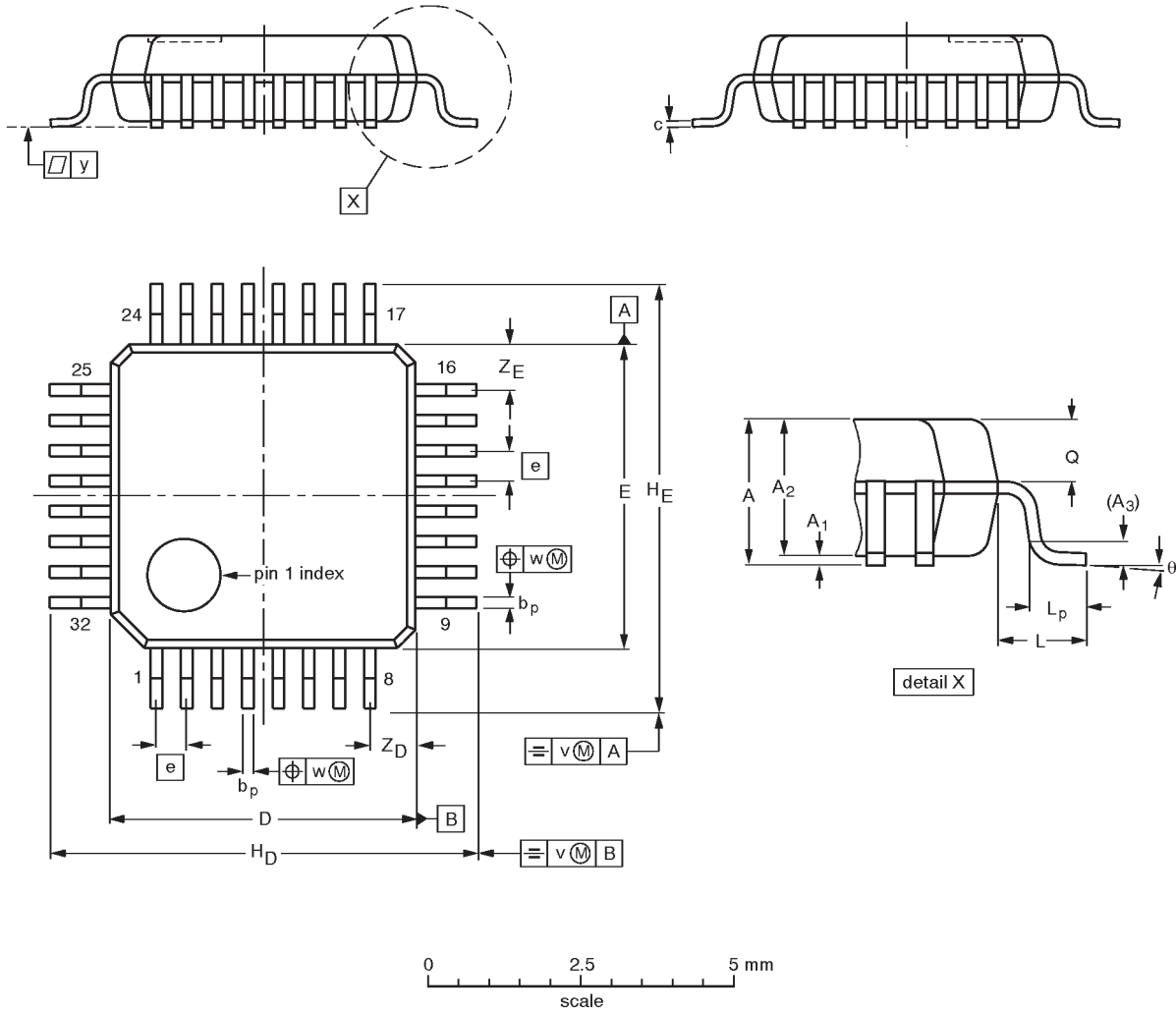
Figure 2. Block Diagram

2.45GHz RF power amplifier and T/R switch

SA2410

LQFP32: plastic low profile quad flat package; 32 leads; body 5 x 5 x 1.4 mm

SOT401-1



DIMENSIONS (mm are the original dimensions)

UNIT	A _{max.}	A ₁	A ₂	A ₃	b _p	c	D ⁽¹⁾	E ⁽¹⁾	e	H _D	H _E	L	L _p	Q	v	w	y	Z _D ⁽¹⁾	Z _E ⁽¹⁾	θ
mm	1.60	0.15 0.05	1.5 1.3	0.25	0.27 0.17	0.18 0.12	5.1 4.9	5.1 4.9	0.5	7.15 6.85	7.15 6.85	1.0	0.75 0.45	0.70 0.57	0.2	0.12	0.1	0.95 0.55	0.95 0.55	7° 0°

Note

1. Plastic or metal protrusions of 0.25 mm maximum per side are not included.

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT401-1						94-04-25- 95-12-19

2.45GHz RF power amplifier and T/R switch

SA2410

DEFINITIONS

Data Sheet Identification	Product Status	Definition
<i>Objective Specification</i>	Formative or in Design	This data sheet contains the design target or goal specifications for product development. Specifications may change in any manner without notice.
<i>Preliminary Specification</i>	Preproduction Product	This data sheet contains preliminary data, and supplementary data will be published at a later date. Philips Semiconductors reserves the right to make changes at any time without notice in order to improve design and supply the best possible product.
<i>Product Specification</i>	Full Production	This data sheet contains Final Specifications. Philips Semiconductors reserves the right to make changes at any time without notice, in order to improve design and supply the best possible product.

Philips Semiconductors and Philips Electronics North America Corporation reserve the right to make changes, without notice, in the products, including circuits, standard cells, and/or software, described or contained herein in order to improve design and/or performance. Philips Semiconductors assumes no responsibility or liability for the use of any of these products, conveys no license or title under any patent, copyright, or mask work right to these products, and makes no representations or warranties that these products are free from patent, copyright, or mask work right infringement, unless otherwise specified. Applications that are described herein for any of these products are for illustrative purposes only. Philips Semiconductors makes no representation or warranty that such applications will be suitable for the specified use without further testing or modification.

LIFE SUPPORT APPLICATIONS

Philips Semiconductors and Philips Electronics North America Corporation Products are not designed for use in life support appliances, devices, or systems where malfunction of a Philips Semiconductors and Philips Electronics North America Corporation Product can reasonably be expected to result in a personal injury. Philips Semiconductors and Philips Electronics North America Corporation customers using or selling Philips Semiconductors and Philips Electronics North America Corporation Products for use in such applications do so at their own risk and agree to fully indemnify Philips Semiconductors and Philips Electronics North America Corporation for any damages resulting from such improper use or sale.

Philips Semiconductors
811 East Arques Avenue
P.O. Box 3409
Sunnyvale, California 94088-3409
Telephone 800-234-7381

Philips Semiconductors and Philips Electronics North America Corporation register eligible circuits under the Semiconductor Chip Protection Act.
 © Copyright Philips Electronics North America Corporation 1996
 All rights reserved. Printed in U.S.A.

Let's make things better.