

# DATA SHEET

## **SA2410**

2.45GHz RF power amplifier and T/R  
switch

Preliminary specification

1997 Sep 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

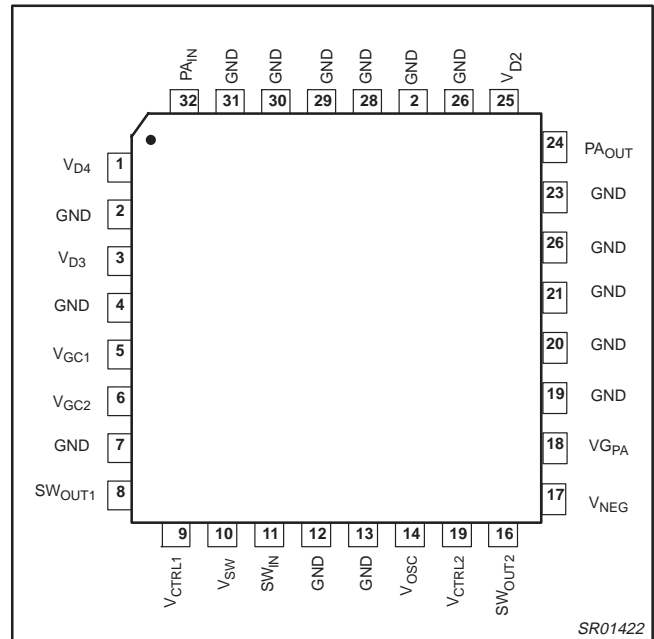


Figure 1. Pin Configuration

## 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	$\mu s$
$T_{off}$	Xmit power down				2	$\mu s$
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		$\pm 3.5$		dB
$\Delta Gt2$	Gain variation with temp	0-70°C		$\pm 2.0$		dB
$\Delta Gr$	Ripple	2.45 $\pm$ 0.05 GHz		$\pm 1$		dB
$\Delta Gvd$	Gain variation with supply	3.3 volts $\pm$ 0.3 V		0.5		dB

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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		$\Omega$
$Z_{out}$	Output impedance			50		$\Omega$
$ISO_{SW}$	Switch Isolation		17	19		dB

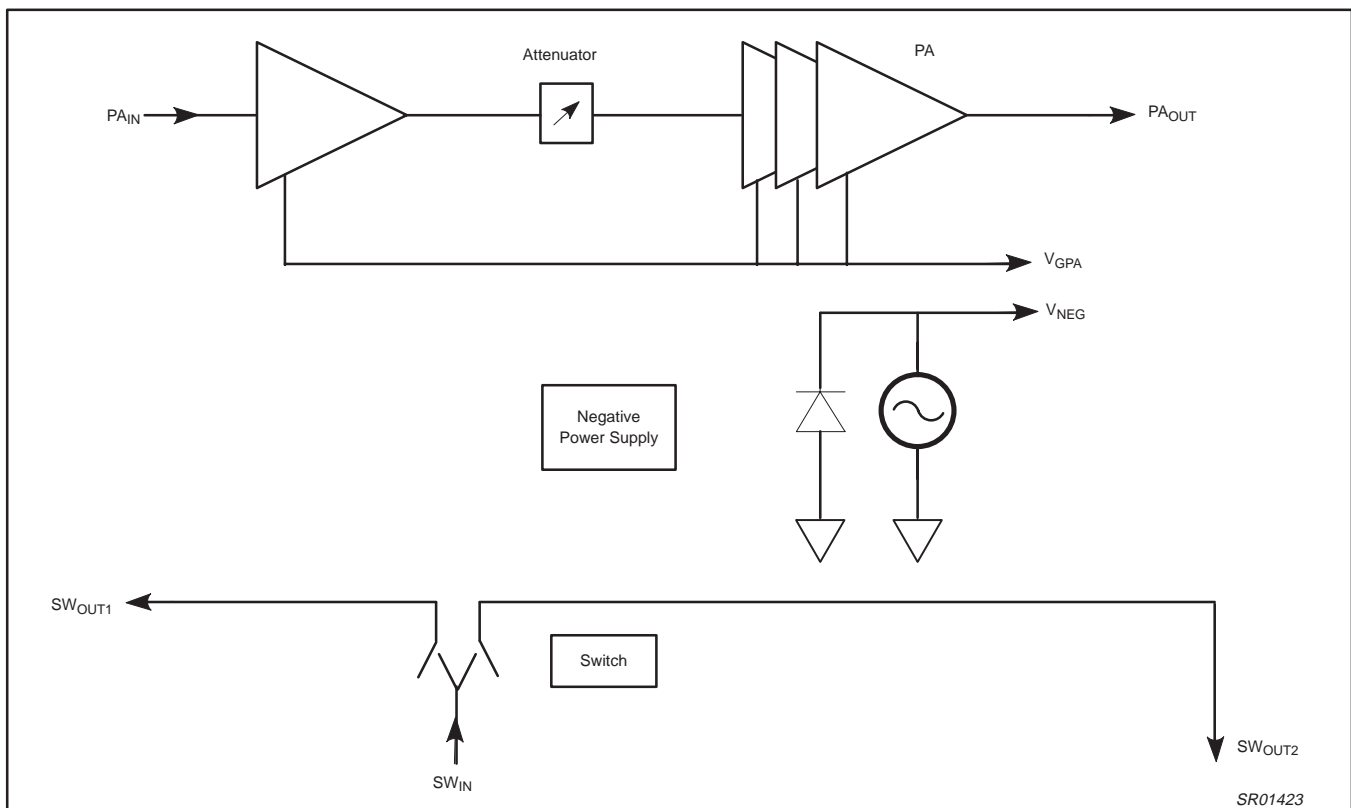


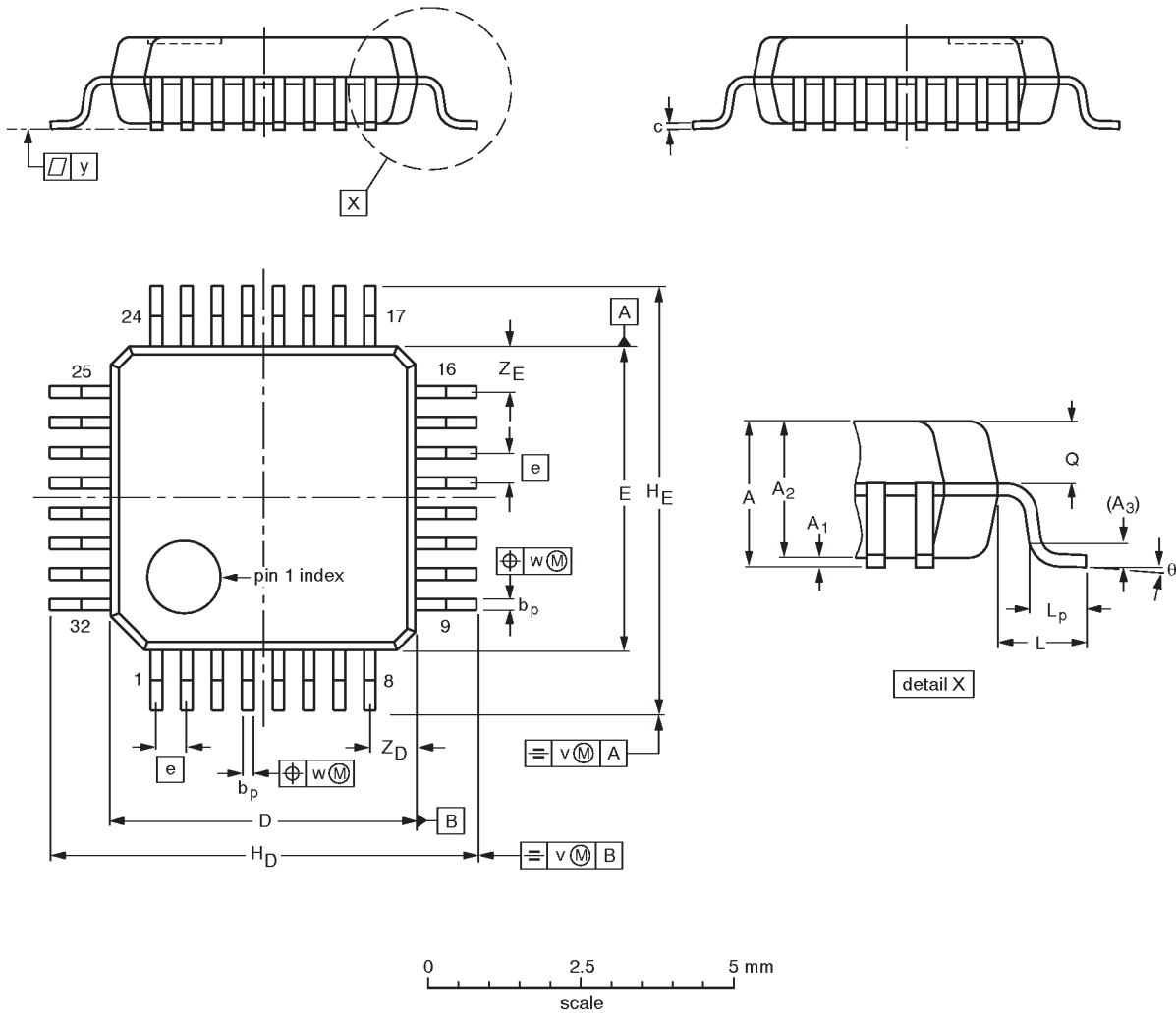
Figure 2. Block Diagram

2.45GHz RF power amplifier and T/R switch

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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 <sub>max.</sub>	A <sub>1</sub>	A <sub>2</sub>	A <sub>3</sub>	b <sub>p</sub>	c	D <sup>(1)</sup>	E <sup>(1)</sup>	e	H <sub>D</sub>	H <sub>E</sub>	L	L <sub>p</sub>	Q	v	w	y	Z <sub>D</sub> <sup>(1)</sup>	Z <sub>E</sub> <sup>(1)</sup>	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

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**NOTES**

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**DEFINITIONS**

<b>Data Sheet Identification</b>	<b>Product Status</b>	<b>Definition</b>
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