

# 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=28dB (typ)
- Attenuation range=14dB (typ)
- TQFP-32 package

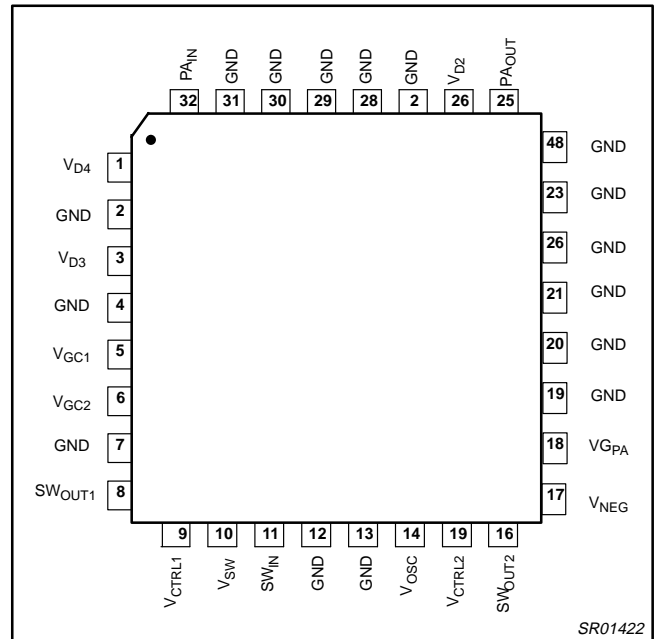


Figure 1. Pin Configuration

### APPLICATIONS

- 802.11 WLAN
- 2.4–2.5 GHz ISM BAND

### ORDERING INFORMATION

DESCRIPTION	TEMPERATURE RANGE	ORDER CODE	DWG #
32-Pin Plastic Thin Quad Flat Package	-40° C+85°C	SA2410	SOT358-2

### 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
<b>Power Amplifier</b>						
$f_{RF}$	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			28		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		2.5		dB
$\Delta Gt2$	Gain variation with temp	0-70°C		2.0		dB
$\Delta Gr$	Ripple	2.45 $\pm$ 0.05 GHz		0.3		dB
$\Delta Gvd$	Gain variation with supply	3.3 volts $\pm$ 0.3 V		0.5		dB
$Z_{in}$	Input impedance			50		$\Omega$

# 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			14		dB
Transmit/receive switch						
Symbol	Parameter	Condition	Min	Typ	Max	Unit
$L_{tx}$	Insertion loss $T_x$				2	dB
$L_{rx}$	Insertion loss $R_x$				1	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		20			dB

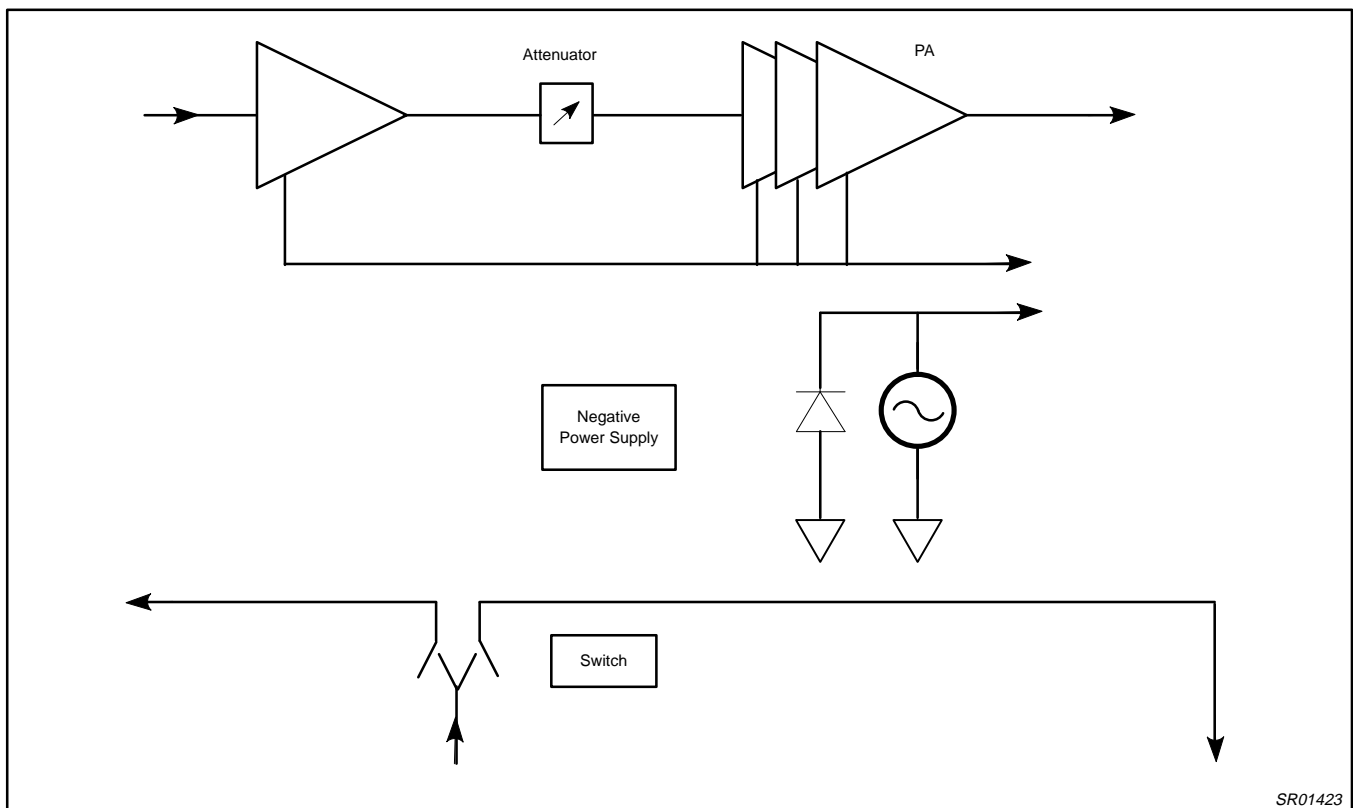


Figure 2. Block Diagram

SR01423