

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

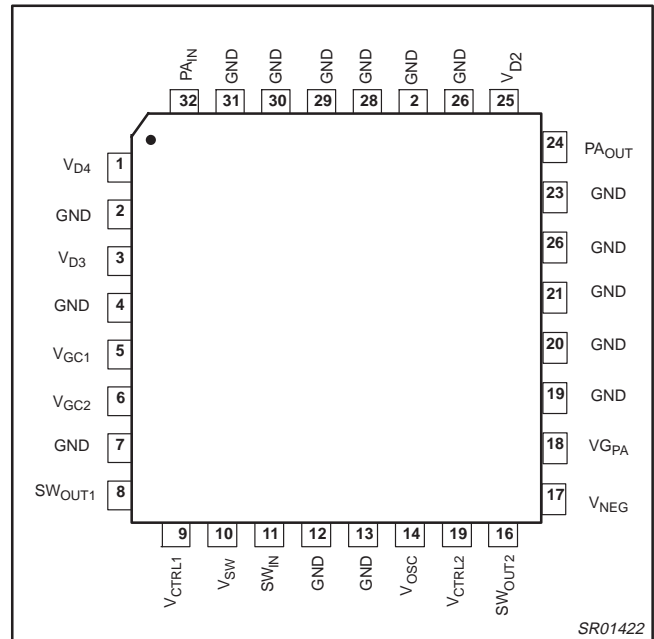


Figure 1. Pin Configuration

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 | 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 |

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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 | | Ω |
| Z_{out} | Output impedance | | | 50 | | Ω |
| ISO_{SW} | Switch Isolation | | 17 | 19 | | dB |

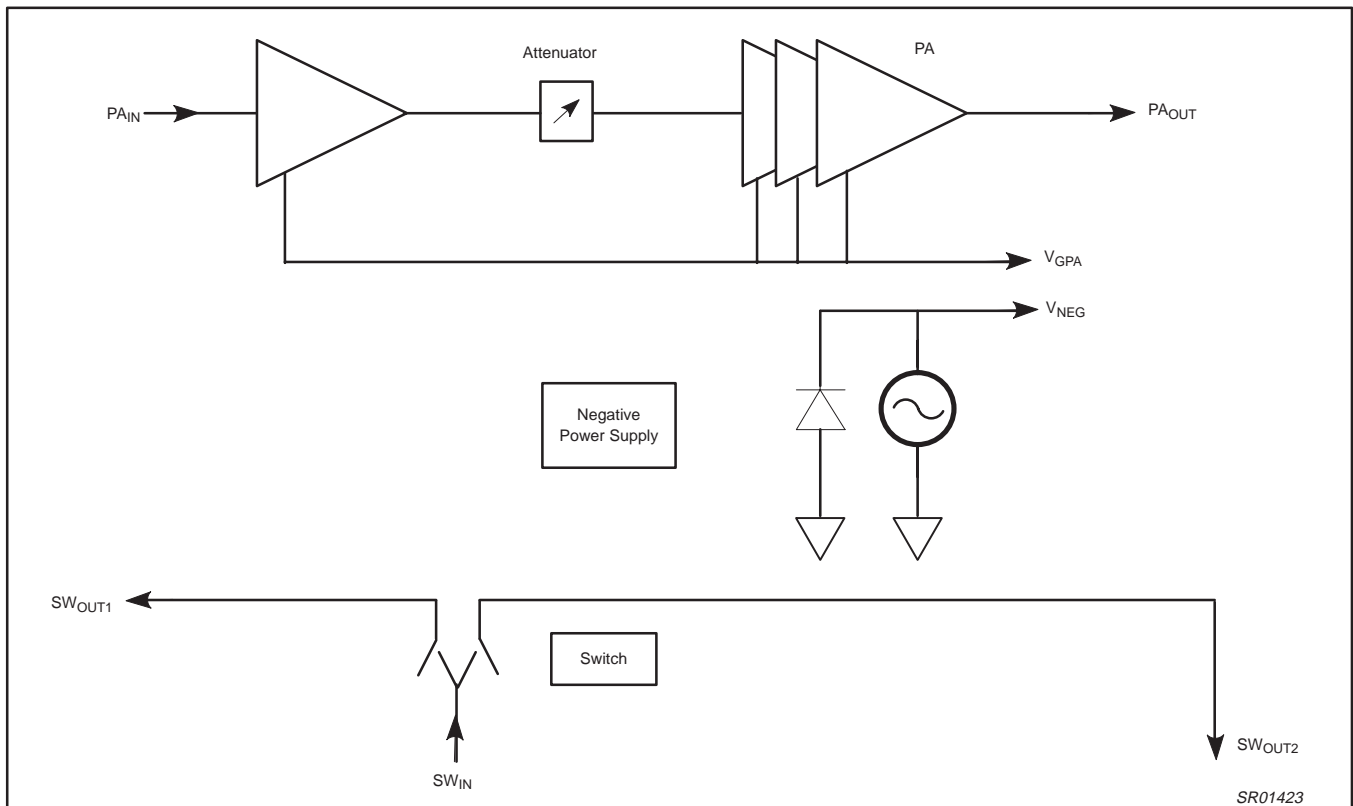


Figure 2. Block Diagram

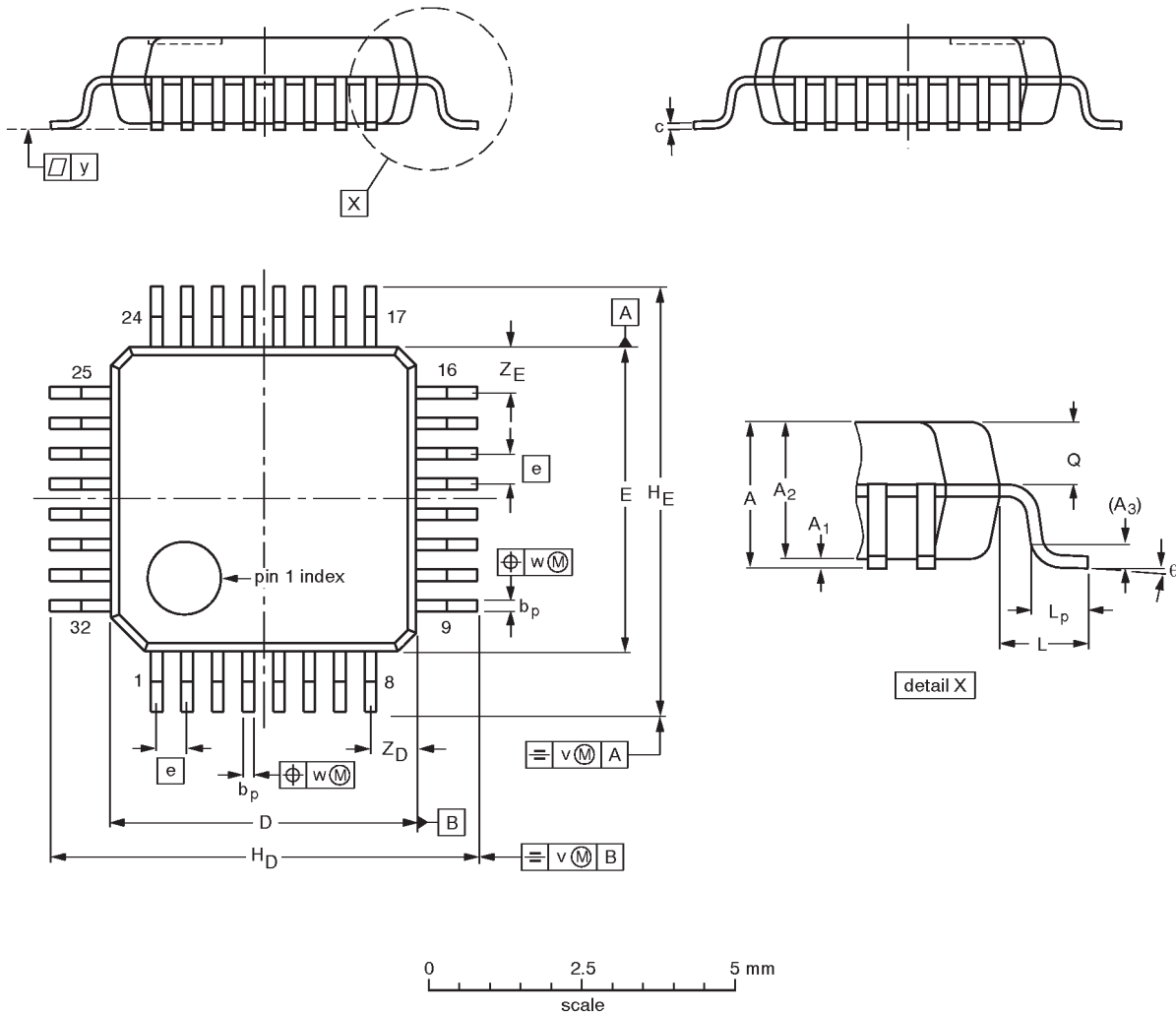
SR01423

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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 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 |

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NOTES

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DEFINITIONS

| Data Sheet Identification | Product Status | Definition |
|----------------------------------|-------------------------------|--|
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