

## 12-bit Touch Panel Controller IC with Temperature Sensor

AR7643

### FEATURES

- Pin compatible to AR7643
- Serial interface
- 4-wire touch screen interface
- Embedded touch panel drivers
- Internal 2.5 V reference
- Direct battery measurement (0 V to 6 V)
- Touch-pressure measurement
- One auxiliary analog input
- On-chip temperature sensor
- 2.2 V to 5.5 V supply voltage
- 12-bit analog to digital converter
- Programmable 8 or 12 bit resolution
- Up to 125 KHz conversion rate
- Full power down control
- SSOP-16 package

### APPLICATIONS

- Touch screen monitors
- PDAs
- Point-of-sales terminals
- Pagers
- High speed data acquisition
- Portable instruments
- Low power instruments

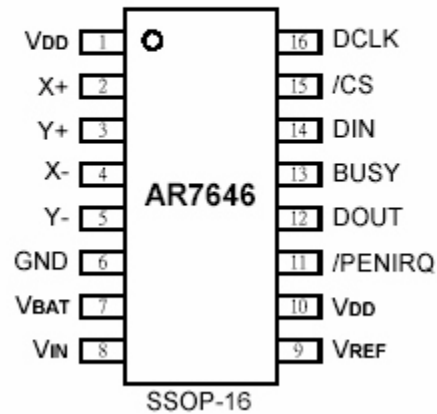
### DESCRIPTION

The AR7646 Touch Screen Controller IC is an advanced version of the AR7643. The AR7646 is a 12-bit SAR analog-to-digital converter (ADC) with SPI serial interface and low on-resistance drivers for 4-wire resistive touch panels.

The AR7646 is a highly integrated controller for portable applications which use 4-wire resistive touch panels such as PDAs, portable instruments, cellular phones, etc. The AR7646 contains all the analog and digital circuitry necessary to complete a pen request. The AR7646 features temperature, battery monitor and touch-pressure measurements and also provides an internal 2.5 V reference that may be turned ON or OFF independently of the ADC.

The AR7646 consumes only 405 mW (internal reference OFF) at a 125 KHz sample rate and a 2.7 V supply and consumes power less than 2.7 mW in shutdown mode. The AR7646 is guaranteed down to 2.2 V supply. The AR7646 is provided in a very small 16-lead SSOP package and is guaranteed over the temperature range from 40 to +85°C.

## Pin Configuration



## Ordering Information

PART	TEMP. RANGE	PACKAGE
AR7646	-40°C to +85°C	SSOP-16

## Pin Description

Pin	Name	Description
1	V <sub>DD</sub>	Power Supply, 2.2V to 5.5V.
2	X+	X+ Input; ADC Input Channel 1.
3	Y+	Y+ Input; ADC Input Channel 2.
4	X-	X- Input.
5	Y-	Y- Input; ADC Input Channel 3.
6	GND	Ground.
7	V <sub>BAT</sub>	Battery Monitor Input; ADC Input Channel 4.
8	V <sub>IN</sub>	Auxiliary Input; ADC Input Channel 5.
9	V <sub>REF</sub>	Reference Voltage Input / Output.
10	V <sub>DD</sub>	Power Supply, 2.2V to 5.5V.
11	/PENIRQ	Pen Interrupt. Requires 10K $\Omega$ to 100K $\Omega$ external pull-up resistor.
12	DOUT	Serial Data Output. This output pin is high impedance when /CS is high.
13	BUSY	Busy Output. This output pin is high impedance when /CS is high.
14	DIN	Serial Data Input.
15	/CS	Chip Select Input. This input is active low.
16	DCLK	External Clock Input.

### Block Diagram

