



3MSPS, 14-Bit SAR ADC

Preliminary Technical Data

AD7484

FEATURES

- Fast Throughput Rate: 3Msps
- Wide Input Bandwidth: 10MHz
- No Pipeline Delays with SAR ADC
- Excellent DC Accuracy Performance
- Low Power:
 - 90mW (Full-Power) and 5mW (NAP Mode)
- Standby Mode: 1 μ A max
- Internal +2.5V Reference
- Full-Scale Overrange Mode (using 15th bit)
- System Offset Removal via User Access Offset Register
- Nominal 0 to +2.5V Input with Shifted Range Capability

GENERAL DESCRIPTION

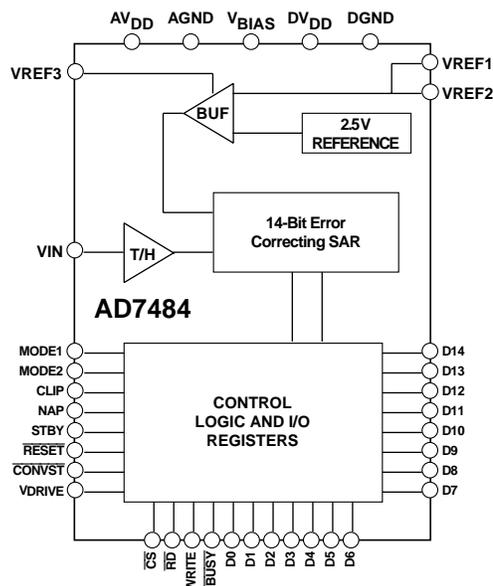
The AD7484 is a 14-bit, high speed, low power, successive-approximation ADC. The part features a parallel interface with throughput rates up to 3Msps. The part also contains a low-noise, wide bandwidth track/hold amplifier which can handle input frequencies in excess of 10MHz.

The conversion process is a proprietary algorithmic successive-approximation technique which results in no pipeline delays. The input signal is sampled and conversion is initiated on the falling edge of a $\overline{\text{CONVST}}$ signal. The conversion process is controlled via an internal clock. Interfacing is via standard parallel signal lines making the part directly compatible with microcontrollers and DSPs.

The AD7484 provides excellent ac and dc performance specifications. Factory trimming ensures high dc accuracy resulting in very low INL, offset and gain errors.

The part uses advanced design techniques to achieve very low power dissipation at high throughput rates. Power consumption in normal mode of operation is 90mW. There are two power-saving modes: a NAP mode, which keeps reference circuitry alive for quick power up, consumes 5mW while a STANDBY mode reduces power consumption to a mere 5 μ W.

FUNCTIONAL BLOCK DIAGRAM



The AD7484 features an on-board +2.5V reference but the part can also accommodate an externally-provided +2.5V reference source. The nominal analog input range is 0 to +2.5V but an offset shift capability allows this nominal range to be offset by ± 200 mV. This allows the user considerable flexibility in setting the bottom end reference point of the signal range, a useful feature when using single-supply op-amps.

The AD7484 also provides the user with an 8% overrange capability via a 15th bit. Thus, if the analog input range strays outside the nominal by up to 8%, the user can still accurately resolve the signal by using the 15th bit.

The AD7484 is powered from a +4.75V to +5.25V supply. The part also provides a V_{DRIVE} pin which allows the user to set the voltage levels for the digital interface lines. The range for this V_{DRIVE} pin is from +2.85V to +5.25V. The part is housed in a 48-pin LQFP package and is specified over a -40°C to $+85^{\circ}\text{C}$ temperature range.

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