

## IP Data Sheet

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# 10-Bit SAR Analog-to-Digital Converter

The TS\_ADC\_10b\_X8 is a 10-bit capacitive successive approximation register (SAR) Analog-to-Digital converter (ADC). It operates with a 3.3 V analog power supply, a 1.8 V digital power supply, and an external voltage reference.

The ADC converts single-ended input voltages and requires no external S/H circuit. In addition to the ADC core, a buffer amplifier prevents the loading of the bandgap voltage reference generator by the ADC. The ADC can quantize inputs with either low or high source impedances. For inputs with high source

impedances, an optional buffer amplifier can be configured.

A simple trimming mechanism is provided to compensate for deviations in the reference voltage.

The sampling rate of the ADC is 125 kS/s. It achieves an integral nonlinearity (INL) between [-1.1 , +0.7] LSB and a differential nonlinearity (DNL) between [-0.9 , +0.8] LSB.

**Technology:** X-FAB XT018-0.18µm BCD-on-SOI CMOS

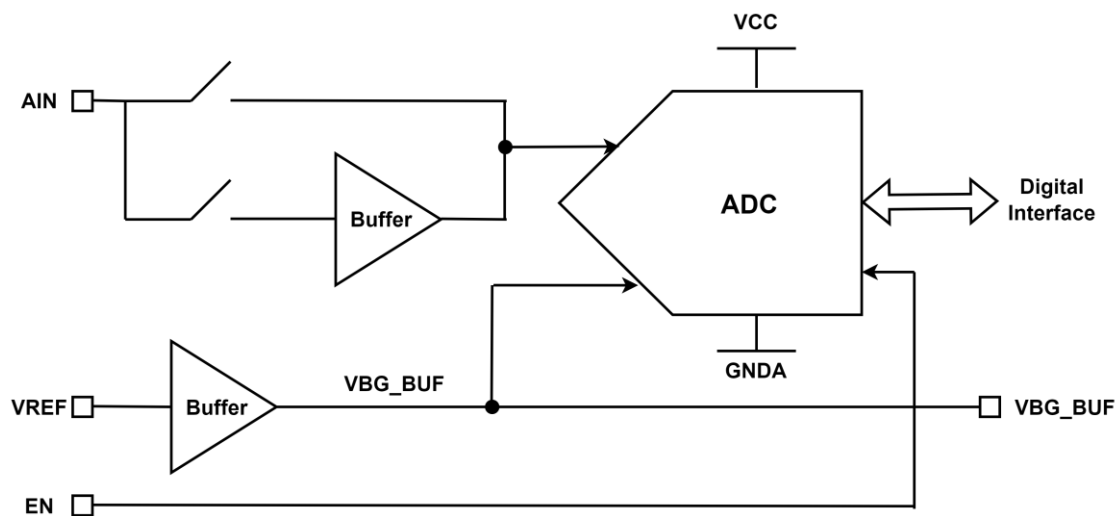


Fig. 1: 10-Bit SAR ADC Block Diagram

## OPERATING CONDITIONS

Parameters	Values
Junction temperature range	-40 °C to +150 °C
Supply voltage	3.2 V to 3.4 V
Master clock frequency	8 MHz
Input source impedance (for use without buffer amplifier)	16 kΩ max
Reference voltage	1.25 V typ.
ADC sampling time	2.875 μs

Table 1: 10-Bit SAR ADC Operating Conditions

## SPECIFICATION

Parameters	Values
Operation DC current consumption on VCC	900 μA max
Sampling capacitance	18 pF typ.
Nominal resolution	10 bit
Integral nonlinearity (INL)	-1.1 LSB to +0.7 LSB
Differential nonlinearity (DNL)	-0.9 LSB to +0.8 LSB

Table 2: 10-Bit SAR ADC Specification

## Sales & Marketing Contact



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LAYOUT VIEW (ANALOG)

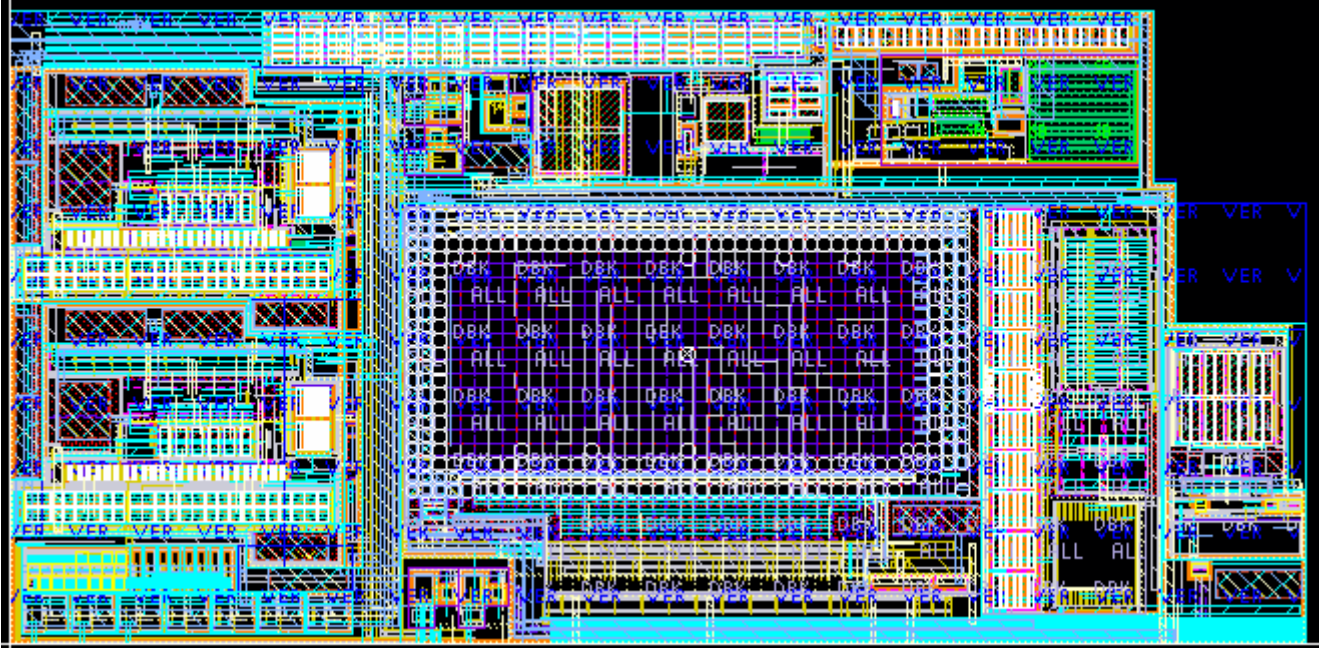


Fig. 2: 10-Bit SAR ADC Layout View