

FEATURES

Low Power Consumption:

175mW max, $V_s = \pm 15V$

150mW max, $V_s = \pm 12V$

Guaranteed Nonlinearity:

$\pm 0.006\%$ FSR max (ADC1143J)

$\pm 0.003\%$ FSR max (ADC1143K)

Guaranteed Differential Nonlinearity:

$\pm 0.006\%$ FSR max (ADC1143J)

$\pm 0.003\%$ FSR max (ADC1143K)

Low Differential Nonlinearity T.C.:

$\pm 2\text{ppm}/^\circ\text{C}$ max (ADC1143J)

$\pm 1\text{ppm}/^\circ\text{C}$ max (ADC1143K)

Fast Conversion Time:

70 μs max (ADC1143J)

100 μs max (ADC1143K)

Wide Power Supply Operation:

$V_s = \pm 11.4V$ to $\pm 18.0V$

$V_D = +3.0V$ to $+18.0V$

APPLICATIONS

Seismic Data Acquisition

Oil Well Instrumentation

Portable Industrial Scales

Portable Test Equipment

Robotics

GENERAL DESCRIPTION

The ADC1143 is a low power 16-bit successive-approximation analog-to-digital converter with a maximum power consumption of 175mW at $V_s = \pm 15V$, 150mW at $V_s = \pm 12V$, and is contained in a 2" x 2" x 0.4" module.

High performance like integral nonlinearity of $\pm 0.006\%$ FSR (ADC1143J)/ $\pm 0.003\%$ FSR (ADC1143K) and differential nonlinearity of $\pm 0.006\%$ FSR (ADC1143J)/ $\pm 0.003\%$ FSR (ADC1143K) are guaranteed. Additional guaranteed performance includes: differential nonlinearity T.C. of $\pm 2\text{ppm}/^\circ\text{C}$ (ADC1143J)/ $\pm 1\text{ppm}/^\circ\text{C}$ (ADC1143K), offset T.C. $\pm 40\mu\text{V}/^\circ\text{C}$ and gain T.C. $\pm 12\text{ppm}/^\circ\text{C}$.

The ADC1143 makes extensive use of CMOS integrated circuits and thin-film components to obtain low power consumption, excellent performance and small size. The internal 16-bit CMOS DAC incorporates proprietary thin-film resistor technology and proprietary current steering switches. CMOS successive-approximation registers, low power comparator and low noise reference are also used to optimize the performance of the ADC1143 (shown in Figure 1).



The ADC1143 can operate with power supply voltages ranging from $\pm 11.4V$ dc to $\pm 8.0V$ dc for V_s and $+3V$ dc to $+18V$ dc for the V_D supply. An internal voltage reference is provided, but an external reference can be used. Five analog input voltage ranges are selectable via user pin programming: $+5V$, $+10V$, $+20V$, $\pm 5V$ and $\pm 10V$. Digital output coding in unipolar operation is true binary; for bipolar operation, the coding is offset binary or two's complement. Digital outputs are provided in both parallel and serial formats.

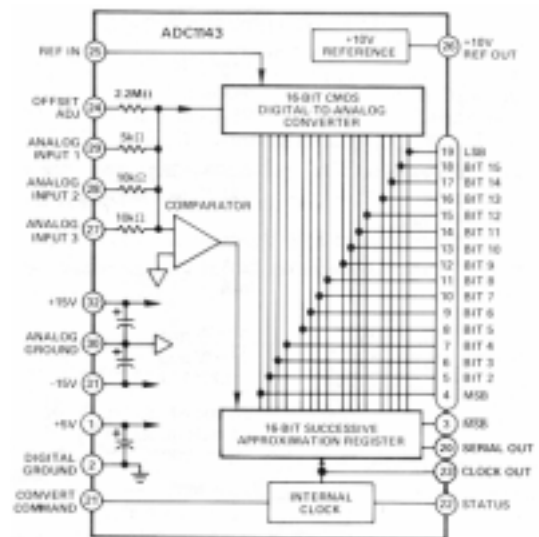


Figure 1. ADC1143 Functional Block Diagram