

Complete Analog Front End for Low Frequency Measurement Applications; Package: TSSOP; No of Pins: 20; Temperature Range: Industrial

Manufacturers	<a href="#">Analog Devices, Inc</a>
Package/Case	TSSOP-20
Product Type	Data Conversion ICs
RoHS	Rohs
Lifecycle	



Images are for reference only

Please submit RFQ for AD7707BRUZ or [Email to us: sales@ovaga.com](mailto:sales@ovaga.com) We will contact you in 12 hours.

[RFQ](#)

## General Description

The AD7707 is a complete analog front end for low frequency measurement applications. This 3-channel device can accept either low level input signals directly from a transducer or high level ( $\pm 10$  V) signals and produce a serial digital output. It employs a  $\Sigma$ - $\Delta$  conversion technique to realize up to 16 bits of no missing codes performance. The selected input signal is applied to a proprietary programmable gain front end based around an analog modulator. The modulator output is processed by an on-chip digital filter. The first notch of this digital filter can be programmed via an on-chip control register allowing adjustment of the filter cutoff and output update rate.

The AD7707 operates from a single 2.7 V to 3.3 V or 4.75 V to 5.25 V supply. The AD7707 features two low level pseudo differential analog input channels, one high level input channel and a differential reference input. Input signal ranges of 0 mV to 20 mV through 0 V to 2.5 V can be accommodated on both low level input channels when operating with a VDD of 5 V and a reference of 2.5 V. They can also handle bipolar input signal ranges of  $\pm 20$  mV through  $\pm 2.5$  V, which are referenced to the LCOM input. The AD7707, with a 3 V supply and a 1.225 V reference, can handle unipolar input signal ranges of 0 mV to 10 mV through 0 V to 1.225 V. Its bipolar input signal ranges are  $\pm 10$  mV through  $\pm 1.225$  V. The high level input channel can accept input signal ranges of  $\pm 10$  V,  $\pm 5$  V, 0 V to 10 V and 0 V to 5 V. The AD7707 thus performs all signal conditioning and conversion for a 3-channel system.

The AD7707 is ideal for use in smart, microcontroller or DSP-based systems. It features a serial interface that can be configured for 3-wire operation. Gain settings, signal polarity and update rate selection can be configured in software using the input serial port. The part contains self-calibration and system calibration options to eliminate gain and offset errors on the part itself or in the system.

CMOS construction ensures very low power dissipation, and the power-down mode reduces the standby power consumption to 20  $\mu$ W typical. This part is available in a 20-lead wide body (0.3 inch) small outline (SOIC) package and a low profile 20-lead TSSOP.

### Product Highlights

The AD7707 consumes less than 1 mW at 3 V supplies and 1 MHz master clock, making it ideal for use in low power systems. Standby current is less than 8  $\mu$ A.

On-chip thin-film resistors allow  $\pm 10$  V,  $\pm 5$  V, 0 V to 10 V, and 0 V to 5 V high level input signals to be directly accommodated on the analog inputs without requiring split supplies or charge-pumps.

The low level input channels allow the AD7707 to accept input signals directly from a strain gage or transducer removing a considerable amount of signal conditioning.

The part features excellent static performance specifications with 16 bits, no missing codes,  $\pm 0.003\%$  accuracy, and lowrms noise. Endpoint errors and the effects of temperature drift are eliminated by on-chip calibration options, which remove zero-scale and full-scale errors.

## Features

Charge balancing ADC 16 bits no missing codes 0.003% nonlinearity

High level ( $\pm 10$  V) and low level ( $\pm 10$  mV) input channels

True bipolar  $\pm 100$  mV capability on low level input channels without requiring charge pumps

Programmable gain front end

Gains from 1 to 128

3-wire serial interface SPI®, QSPI™, MICROWIRE™ and DSP Compatible Schmitt trigger input on SCLK

Ability to buffer the analog input

2.7 V to 3.3 V or 4.75 V to 5.25 V operation

Power dissipation 1 mW @ 3 V

Standby current 8  $\mu$ A max

20-Lead SOIC and TSSOP Packages

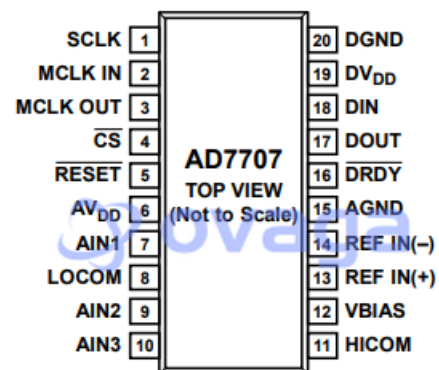


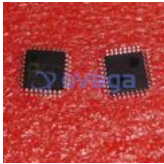
Figure 3. Pin Configuration



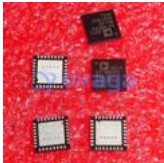
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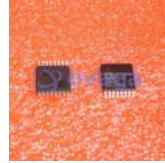
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