

Dual Precision, Low Cost, High Speed, BiFET Op Amp

Manufacturers	Analog Devices, Inc
Package/Case	CDIP-8
Product Type	Operational Amplifiers
RoHS	
Lifecycle	



Images are for reference only

Please submit RFQ for AD712SQ/883B or [Email to us: sales@ovaga.com](mailto:sales@ovaga.com) We will contact you in 12 hours.

[RFQ](#)

General Description

The AD7124-4 is a low power, low noise, completely integrated analog front end for high precision measurement applications. The device contains a low noise, 24-bit Σ - Δ analog-to-digital converter (ADC), and can be configured to have 4 differential inputs or 7 single-ended or pseudo differential inputs. The onchip low gain stage ensures that signals of small amplitude can be interfaced directly to the ADC.

One of the major advantages of the AD7124-4 is that it gives the user the flexibility to employ one of three integrated power modes. The current consumption, range of output data rates, and rms noise can be tailored with the power mode selected. The device also offers a multitude of filter options, ensuring that the user has the highest degree of flexibility.

The AD7124-4 can achieve simultaneous 50 Hz and 60 Hz rejection when operating at an output data rate of 25 SPS (single cycle settling), with rejection in excess of 80 dB achieved at lower output data rates.

The AD7124-4 establishes the highest degree of signal chain integration. The device contains a precision, low noise, low drift internal band gap reference, and also accepts an external differential reference, which can be internally buffered. Other key integrated features include programmable low drift excitation current sources, burnout currents, and a bias voltage generator, which sets the common-mode voltage of a channel to $AVDD/2$. The low-side power switch enables the user to power down bridge sensors between conversions, ensuring the absolute minimal power consumption of the system. The device also allows the user the option of operating with either an internal clock or an external clock.

The integrated channel sequencer allows several channels to be enabled simultaneously, and the AD7124-4 sequentially converts on each enabled channel, simplifying communication with the device. As many as 16 channels can be enabled at any time; a channel being defined as an analog input or a diagnostic such as a power supply check or a reference check. This unique feature allows diagnostics to be interleaved with conversions.

The AD7124-4 also supports per channel configuration. The device allows eight configurations or setups. Each configuration consists of gain, filter type, output data rate, buffering, and reference source. The user can assign any of these setups on a channel by channel basis.

The AD7124-4 also has extensive diagnostic functionality integrated as part of its comprehensive feature set. These diagnostics include a cyclic redundancy check (CRC), signal chain checks, and serial interface checks, which lead to a morerobust solution. These diagnostics reduce the need for external components to implement diagnostics, resulting in reduced board space needs, reduced design cycle times, and cost savings. The failure modes effects and diagnostic analysis (FMEDA) of a typical application has shown a safe failure fraction (SFF) greater than 90% according to IEC 61508.

The device operates with a single analog power supply from 2.7 V to 3.6 V or a dual 1.8 V power supply. The digital supply has a range of 1.65 V

to 3.6 V. It is specified for a temperature range of -40°C to $+105^{\circ}\text{C}$. The AD7124-4 is housed in a 32-lead LFCSP package or a 24-lead TSSOP package.

Features

Three power modes

RMS noise

Low power: 24 nV rms at 1.17 SPS,>

Mid power: 20 nV rms at 2.34 SPS,>

Full power: 23 nV rms at 9.4 SPS,>

Up to 22 noise free bits in all power modes>

Output data rate

Full power: 9.38 SPS to 19,200 SPS

Mid power: 2.34 SPS to 4800 SPS

Low power: 1.17 SPS to 2400 SPS

Rail-to-rail analog inputs for gains > 1

Simultaneous 50 Hz/60 Hz rejection at 25 SPS (single cycle settling)

Diagnostic functions (which aid safe integrity level (SIL) certification)

Crosspoint multiplexed analog inputs

4 differential/7 pseudo differential inputs

Programmable gain (1 to 128)

Band gap reference with 10 ppm/ $^{\circ}\text{C}$ drift maximum (70 μA)

Matched programmable excitation currents

Internal clock oscillator

On-chip bias voltage generator

Low-side power switch

General-purpose outputs

Multiple filter options

Internal temperature sensor

Self and system calibration

Application

Temperature measurement

Pressure measurement

Industrial process control

Instrumentation Smart transmitters

Smart transmitters

Sensor burnout detection

Automatic channel sequencer

Per channel configuration

Power supply: 2.7 V to 3.6 V and ± 1.8 V

Independent interface power supply

Power-down current: 5 μ A maximum

Temperature range: -40°C to $+125^{\circ}\text{C}$

32-lead LFCSP/24-lead TSSOP

3-wire or 4-wire serial interface

SPI, QSPI, MICROWIRE, and DSP compatible

Schmitt trigger on SCLK

ESD: 4 kV

AD7124-4-EP Supports defense and aerospace applications (AQEC standard)

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Full military temperature range: -55°C to $+125^{\circ}\text{C}$

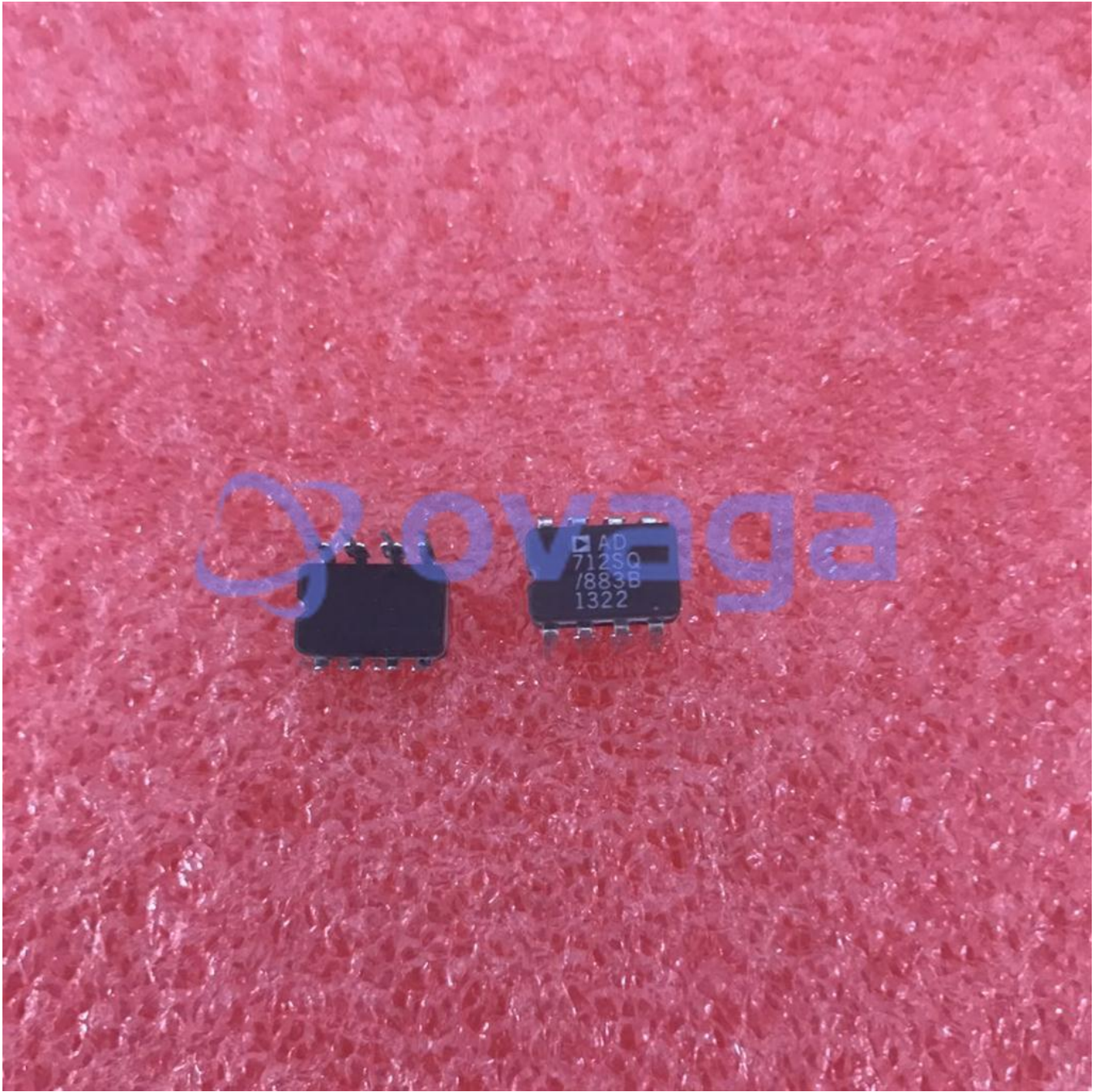
Controlled manufacturing baseline

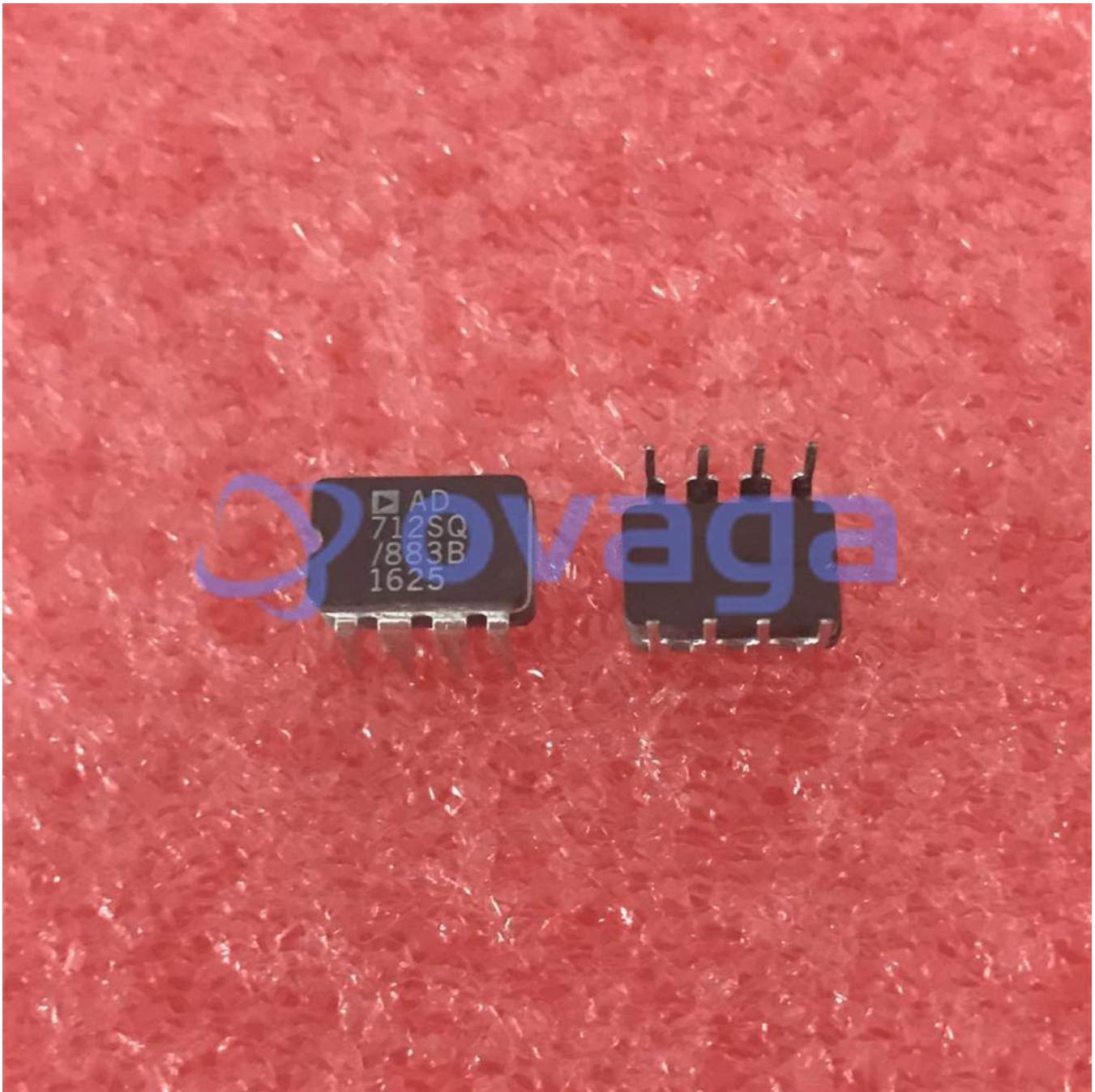
1 assembly/test site

1 fabrication site

Product change notification

Qualification data available on request





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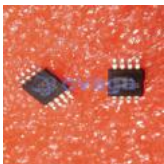
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