ANALOG B-Channel, Low Noise, Low Power, 24-Bit, Sigma-Delta ADC with PGA and Reference Sigma-Delta ADC with PGA and Reference

Data Sheet

FEATURES

3 power modes

RMS noise

Low power: 24 nV rms at 1.17 SPS, gain = 128 (255 µA typical) Mid power: 20 nV rms at 2.34 SPS, gain = 128 (355 µA typical) Full power: 23 nV rms at 9.4 SPS, gain = 128 (930 µA typical)

Up to 22 noise free bits in all power modes (gain = 1)

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 settlina)
- Diagnostic functions (which aid safe integrity level (SIL) certification)
- **Crosspoint multiplexed analog inputs**

8 differential/15 pseudo differential inputs

Programmable gain (1 to 128)

Band gap reference with 10 ppm/°C drift maximum (70 µA) (B grade)

- 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 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 µA maximum Temperature range: -40°C to +125°C 32-lead LFCSP 3-wire or 4-wire serial interface SPI, QSPI™, MICROWIRE™, and DSP compatible Schmitt trigger on SCLK ESD: 4 kV

APPLICATIONS

Temperature measurement Pressure measurement Industrial process control Instrumentation Smart transmitters

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FUNCTIONAL BLOCK DIAGRAM



Figure 1.

Rev. E

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AD7124-8

AD7124-8

Data Sheet

ORDERING GUIDE

| Model ¹ | Temperature Range | Package Description | Package Option |
|--------------------|-------------------|---|----------------|
| AD7124-8BCPZ | -40°C to +125°C | 32-Lead Lead Frame Chip Scale Package [LFCSP] | CP-32-12 |
| AD7124-8BCPZ-RL | -40°C to +125°C | 32-Lead Lead Frame Chip Scale Package [LFCSP] | CP-32-12 |
| AD7124-8BCPZ-RL7 | -40°C to +125°C | 32-Lead Lead Frame Chip Scale Package [LFCSP] | CP-32-12 |
| AD7124-8BBCPZ | -40°C to +125°C | 32-Lead Lead Frame Chip Scale Package [LFCSP] | CP-32-30 |
| AD7124-8BBCPZ-RL | -40°C to +125°C | 32-Lead Lead Frame Chip Scale Package [LFCSP] | CP-32-30 |
| AD7124-8BBCPZ-RL7 | -40°C to +125°C | 32-Lead Lead Frame Chip Scale Package [LFCSP] | CP-32-30 |
| EVAL-AD7124-8SDZ | | Evaluation Board | |
| EVAL-SDP-CB1Z | | Evaluation Controller Board | |

 1 Z = RoHS Compliant Part.



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