256-Channel, 24-Bit, Current-to-Digital ADC Module

Data Sheet

ADAS1135

FEATURES

256-channel, current-to-digital converter module
Up to 24-bit resolution
Variable integration time
    Fastest integration time: 22.6 kSPS maximum
    (44.2 µs minimum) at 20-bit resolution
Low power dissipation: 2.3 mW per channel at any
    throughput
Integral linearity
    ±0.050% of reading, ±1.0 ppm of FSR: all channels active
Very low noise
Simultaneous sampling
    No dead time, no loss of charge, 100% charge collection
User adjustable full-scale range
On-board temperature sensor and reference buffer
15 mm × 15 mm, CSP_BGA package
Simple printed circuit board (PCB) design
    Integrated capacitors for supply and reference decoupling
    0.80 mm pitch BGA allows low cost PCB technology
Support tools
    Evaluation board
    Reference design with reference layout
    FPGA Verilog code

APPLICATIONS

Medical, industrial, and security CT scanner data acquisition
Photodiode sensors
Dosimetry and radiation therapy systems
Optical fiber power monitoring
X-ray detection systems
High channel count data acquisition systems (current or
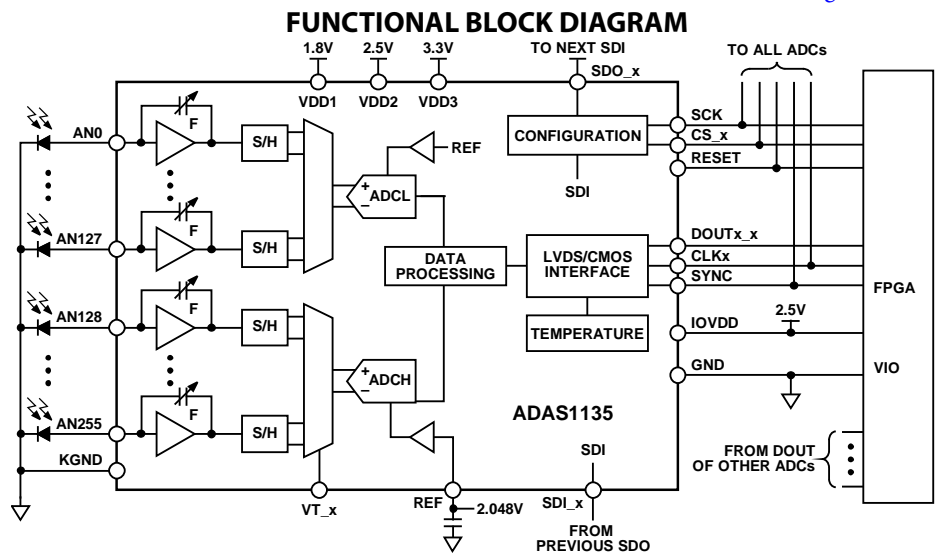   voltage inputs)

GENERAL DESCRIPTION

The ADAS1135 is a 256-channel, current-to-digital, analog-to-digital converter (ADC) module. It contains 256 low power, low noise, low input current integrators, simultaneous sample-and-holds, and two high speed, high resolution ADCs with configurable sampling rate and resolutions of up to 24 bits. The signal chain and sampling architecture of the ADAS1135 is designed to guarantee that all channels are simultaneously sampled, and that no charge is lost throughout the sampling process.

All converted channel results are output on a dual, low voltage differential signaling (LVDS), self clocked serial interface, which reduces external hardware.

An SPI-compatible serial interface allows configuration of the ADC using the SDI_x input. The SDO_x output allows the user to daisy-chain several ADCs on a single, 4-wire bus. The ADAS1135 uses the separate supply, IOVDD, to reduce digital noise effect on the conversions.

The ADAS1135 is in a 15 mm × 15 mm, CSP_BGA package.

For more information on the ADAS1135, contact Analog Devices, Inc., at: adas@analog.com.

FUNCTIONAL BLOCK DIAGRAM

Figure 1.

NOTES

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