256-Channel, 16-Bit, Charge-to-Digital AFE on Flex

Data Sheet

ADAS1256

FEATURES

256-channel, charge-to-digital conversion on a single chip
16-bit resolution with no missing codes
Simultaneous sampling
User adjustable full-scale range up to 32 pC
Down to 22 µs line time
Ultralow noise: 560 e⁻ at 2 pC range
INL ± 2.5 LSB or 57.5 ppm, ADC included
Multiple functional power modes: 1 mW/channel to 3 mW/channel
Multiple power-down and sleep modes: down to 0.005 mW/channel
Measurement of electron or hole collected charge
Tested and delivered on high density system on flex (SOF)
LVDS/CMOS self-clocked serial interface
SPI daisy-chain configuration registers
On-board AFE timing sequencer
On-board temperature sensor and reference buffer

APPLICATIONS

Digital X-ray panel
Photodiode sensors array
CT scanner
High channel count, data acquisition systems (current or voltage input)

GENERAL DESCRIPTION

The ADAS1256 is a 256-channel, 16-bit, digital X-ray analog front end (AFE) that integrates the complete charge-to-digital conversion signal chain on a single chip. It enables a wide range of digital X-ray modalities, including portable radiology and mammography as well as high speed fluoroscopy and cardiac imaging. The ADAS1256 is delivered on a high density system-on-flex (SOF) package that can be directly mounted on a digital X-ray panel.

All converted channel results are output on a single LVDS self-clocked serial interface that significantly reduces external hardware.

An SPI-compatible serial interface allows configuration of the AFE, using the SDI input. The SDO output allows the user to daisy-chain several AFEs on a single 3-wire bus.

An integrated AFE timing sequencer controls the sampling activity of the analog front end (AFE). The sequencer is programmed via the SPI port and is timed by a single clock, ACLK.

FUNCTIONAL BLOCK DIAGRAM

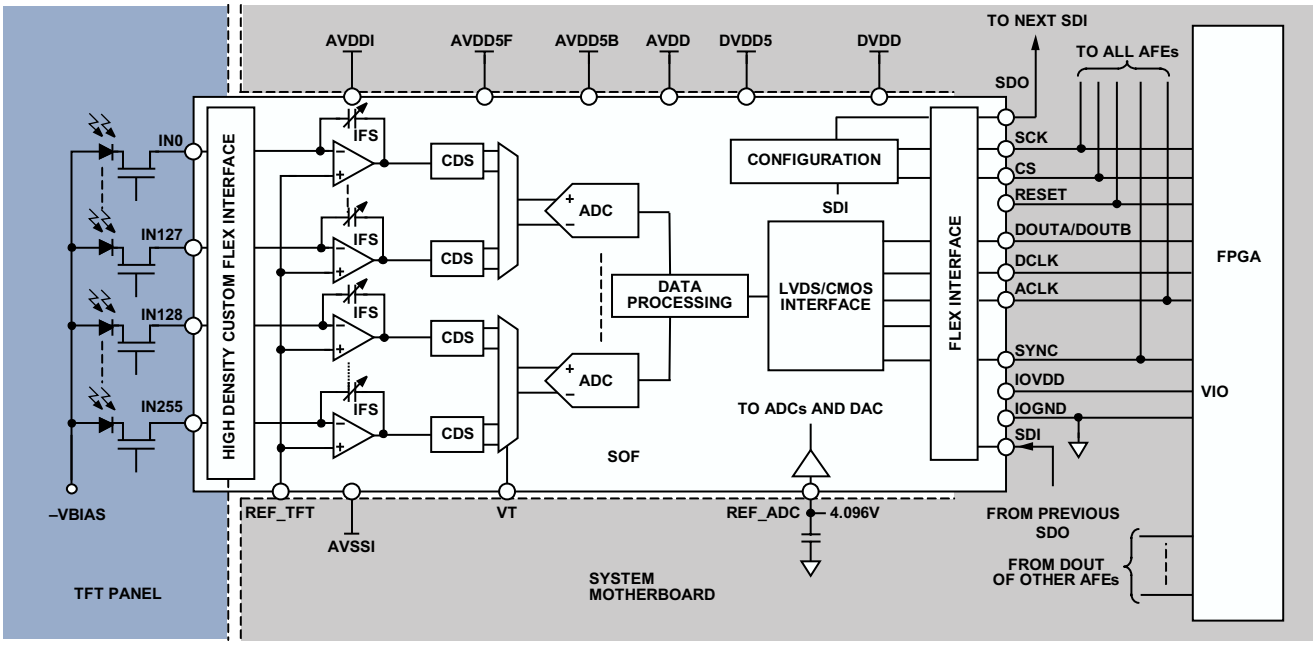

Figure 1.

Rev. Sp0 Document Feedback

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NOTES

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