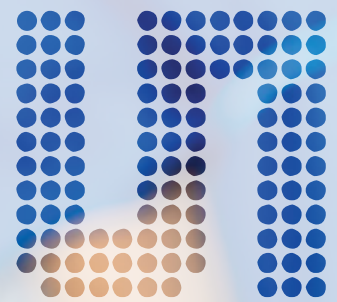


High Resolution CT Imaging

www.ams.com/AS5900



AS5900 – 26 bit 128 Channel Low Noise Current-to-Digital Converter

- High resolution up to 26 bit
- Improved contrast based on high linearity of ± 250 ppm of reading and ± 1 ppm of Full Scale Range (FSR)
- High sensitivity due to ultra-low noise level down to 3200 electrons at 1 μ A FSR
- Very high frame rates achieved by extremely fast integration time down to 50 μ s
- Reduced self-heating due to very low power dissipation down to 1 mW/Channel

**Sensing
is life.**

General Description

The AS5900 is a low noise, 128 channel current-to-digital converter that enables the readout of the photodiodes with highest sensitivity. High-resolution CT imaging can be achieved by up to 26-bits resolution of the AS5900. Its 128 low noise and high linear converter channels provide an increased gray scale, improved contrast and reduce artifacts of 3D CT images. The low power consumption of 1 mW per channel reduces self-heating effects and the overall power consumption of the system. An integrated temperature sensor allows the calibration of temperature drifts of the X-ray detector modules.

The device allows flexible configuration over a four-wire SPI serial interface to achieve the optimized operation point in various imaging applications. Full scale range, resolution, power consumption as well as integration time are fully adjustable. A minimum integration time of 50 μ s allows fast frame rates of all channels that are transferred through a high speed LVDS data interface. The device has an on-chip voltage reference for a cost optimized detector and is available in a 10 x 10 mm² BGA package.

Applications

- Medical, industrial and security CT scanner data acquisition
- Multichannel sensor with current output (i.e. photodiode arrays)
- X-ray detection systems

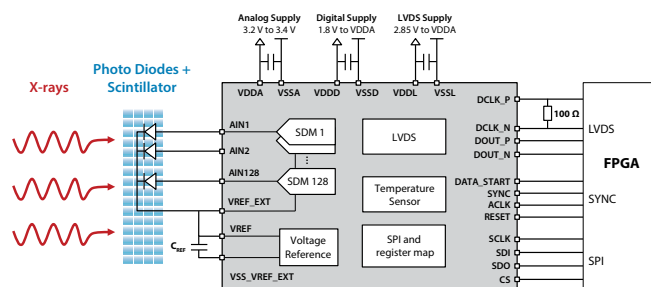
Features

- Flexible configuration to get optimized operation point for application via SPI interface
- Adjustable full scale range, resolution, integration time and power consumption
- High speed LVDS data interface up to 80 Mbps data rate
- On-chip voltage reference and temperature sensor

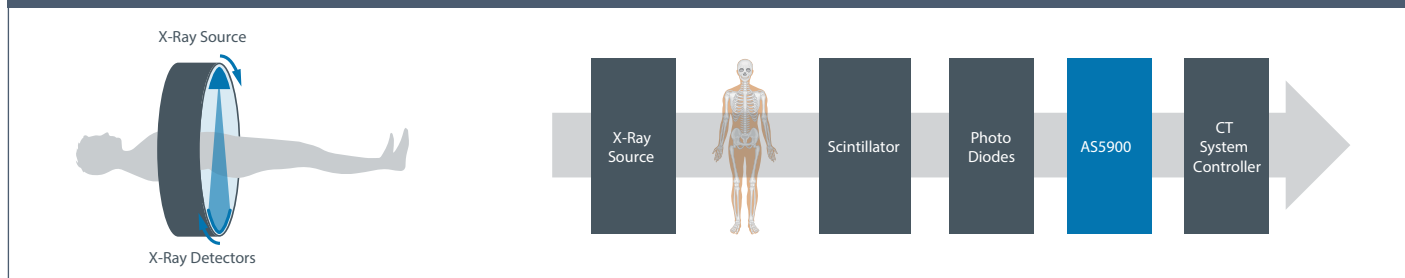
Benefits

- Ultra-low noise down to 3200 electrons at 50 μ s integration time and 1 μ A of Full Scale Range
- Very fast integration time down to 50 μ s
- High linearity of \pm 250 ppm of reading and \pm 1 ppm of FSR
- Very low power dissipation down to 1 mW per channel
- Up to 26 bit resolution

Block Diagram



Computed Tomography Detection



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