

Time-of-Flight Depth Image Signal Processor

FEATURES

- ▶ Depth processor for Analog Devices Time-of-Flight imagers
- ▶ Full depth processing at 640x480 resolution, up to 90 FPS
- ▶ Partial depth processing at 1024x1024 resolution, up to 40 FPS
- ▶ On-chip SRAM for frame buffering & manipulation
- ▶ Arm Cortex-M33 processor for data flow control
- ▶ 4-lane MIPI CSI-2 receiver interface, 2.5 Gbps per lane
- ▶ 2-lane MIPI CSI-2 transmitter interface, 2.5 Gbps per lane
- ▶ I²C Master & Slave (1 MHz), I³C Slave (12.5 MHz)
- ▶ QSPI Master & Slave (40 MHz)
- ▶ 22 GPIO for external connectivity
- ▶ Crystal oscillator (24 MHz) or external clock (24 MHz, 19.2 MHz)
- ▶ 1.8V I/O supply, 0.8V core supply
- ▶ 3.47mm x 3.47mm WLCSP with 9x9 ball array

APPLICATIONS

- ▶ Augmented reality (AR) systems
- ▶ Robotics
- ▶ Building automation
- ▶ Machine vision systems

GENERAL DESCRIPTION

The ADSD3500 is a Time-of-Flight (ToF) Depth Image Signal Processor (ISP) for Analog Devices ToF products such as the ADF3175 and ADS3030. The Depth ISP processes the raw phase frames from the ToF imager, generating the final radial depth, active brightness (AB), and confidence frames. The ADSD3500 supports full computation of depth, active brightness and confidence data for 640x480 resolution, and partial depth computation (pre-phase unwrap) for 1024x1024 resolution. Data and processing flow is controlled using the integrated ARM[®] Cortex[®]-M33. Computation is performed using dedicated hardware and memory, enabling a low power ToF depth ISP solution. The ADSD3500 also controls the boot-up of the image sensor module, loading of calibration data, and triggering of frames.

The image data receiver (Rx) and transmitter (Tx) ports use standard Mobile Industry Processor Interface (MIPI) Camera Serial Link 2 (CSI-2) interfaces. Processor programming and operation are controlled through 4-wire QSPI, I²C, and I³C serial interfaces.

The ADSD3500 is available in a 3.47mm x 3.47mm WLCSP, and is specified over an operating temperature range of -25°C to +85°C.

FUNCTIONAL BLOCK DIAGRAM

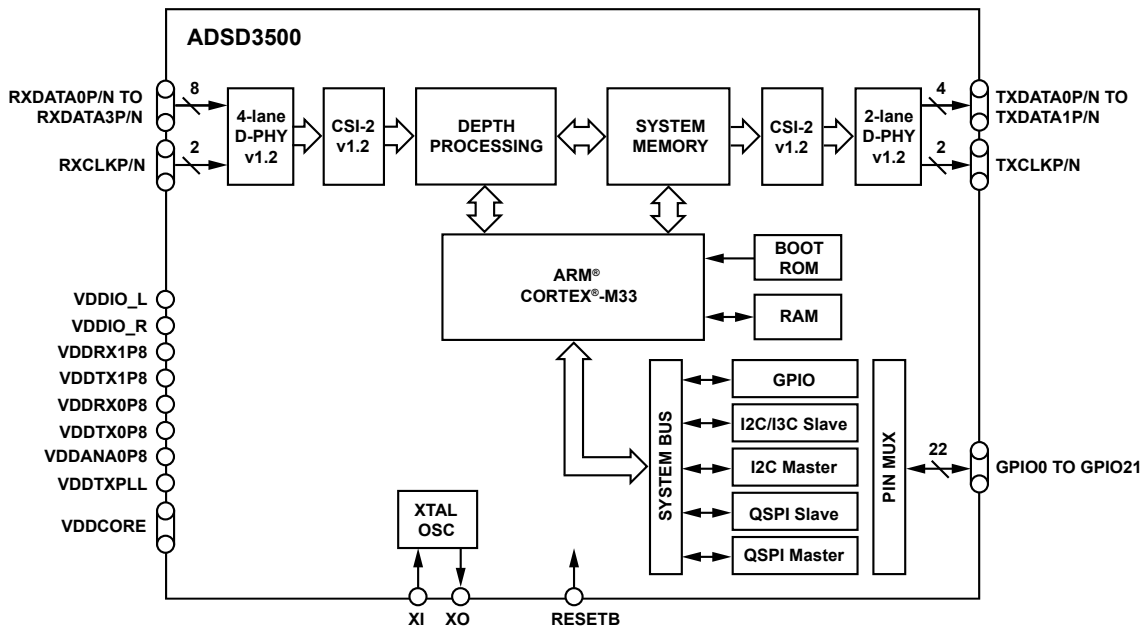


Figure 1.

For more information about the ADSD3500, contact tof@analog.com.

Rev. PrB

DOCUMENT FEEDBACK

TECHNICAL SUPPORT

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