Dual-Channel, 14-Bit CCD Signal Processor with V-Driver and *Precision Timing* Generator

Data Sheet **AD9928**

FEATURES

60 MHz grade available (AD9928BBCZ-60)
Registers similar to AD9920A and AD9990
Timing generator with 18-channel V-driver
Serial data output with reduced range LVDS interface
1.8 V dual AFE core
Internal LDO regulators for compatibility with 3 V systems
Correlated double sampler (CDS) with −3 dB, 0 dB, +3 dB, and +6 dB gain
6 dB to 42 dB, 10-bit variable gain amplifier (VGA)
14-bit, 40 MHz analog-to-digital converter (ADC)
Black level clamp with variable level control
***Precision Timing* core with ~390 ps resolution at 40 MHz**
On-chip 3 V horizontal and RG drivers
General-purpose outputs (GPOs) for shutter support
On-chip driver for external crystal
128-ball CSP_BGA package, 9 mm × 9 mm, 0.65 mm pitch

APPLICATIONS

High speed digital imaging
Surveillance cameras
Industrial cameras

GENERAL DESCRIPTION

The AD9928 is a highly integrated CCD signal processor for digital still-image camera applications. It includes a dual analog front end with analog-to-digital conversion, combined with a full-function, programmable timing generator and an 18-channel vertical driver (V-driver) for a 2-channel output CCD. The timing generator is capable of supporting up to 24 vertical clock signals internally, and the on-chip V-driver supports up to 18 high voltage outputs. A *Precision Timing*® core allows adjustment of high speed clocks with approximately 390 ps resolution at 40 MHz operation. The AD9928 also contains seven general-purpose outputs, which can be used for shutter and system functions.

Each analog front end includes black level clamping, CDS, VGA, and a 14-bit ADC. The timing generator provides all the necessary CCD clocks: RG, H-clocks, V-clocks, sensor gate pulses, substrate clock, and substrate bias control.

The AD9928 is specified over an operating temperature range of −25°C to +85°C.

FUNCTIONAL BLOCK DIAGRAM

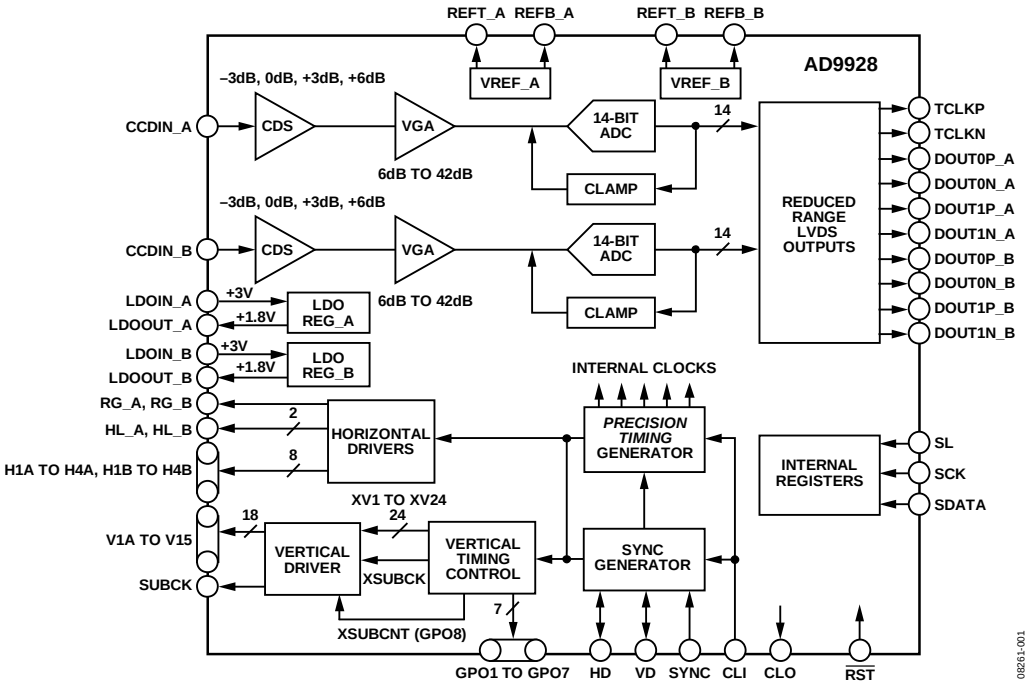

Figure 1.

For more information on the AD9928, email Analog Devices, Inc., at afe.ccd@analog.com.

Rev. SpH **Document Feedback**

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NOTES

D08261F-0-1/13(SpH)

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