# **ANALOG** Dual-Channel, 14-Bit CCD Signal Processor and *Precision Timing* Core

## AD9990

#### FEATURES

1.8 V AFETG core Internal LDO regulators 24 programmable vertical clock signals 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, 32 MHz analog-to-digital converter (ADC) Black level clamp with variable level control Complete on-chip timing generator *Precision Timing* core with ~488 ps resolution On-chip 3 V horizontal and RG drivers General-purpose outputs (GPOs) for shutter and system support On-chip driver for external crystal On-chip sync generator with external sync input

112-ball CSP\_BGA package, 8 mm × 8 mm, 0.65 mm pitch

#### **APPLICATIONS**

**Digital still cameras** 

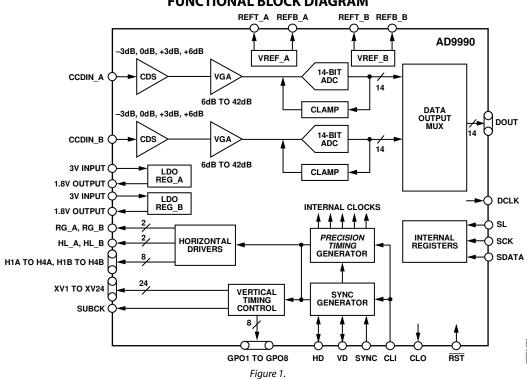
#### **GENERAL DESCRIPTION**

The AD9990 is a highly integrated CCD signal processor for digital still camera applications. It includes a complete analog front end with analog-to-digital conversion and a full-function, programmable timing generator for a 2-channel output CCD. Each channel is specified up to 32 MHz. The timing generator is capable of supporting up to 24 vertical clock signals to control advanced CCDs. A *Precision Timing*<sup>\*</sup> core allows adjustment of high speed clocks with ~488 ps resolution at 32 MHz operation. The AD9990 also contains eight general-purpose outputs that can be used for shutter and system functions.

Each analog front end includes black level clamping, a CDS, a 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 AD9990 is specified over an operating temperature range of  $-25^{\circ}$ C to  $+85^{\circ}$ C.

For more information about the AD9990, contact Analog Devices via email at afe.ccd@analog.com.



### FUNCTIONAL BLOCK DIAGRAM

#### Rev. SpB

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## AD9990

## NOTES

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