

CCD SIGNAL PROCESSOR FOR DIGITAL CAMERAS

FEATURES

- **CCD Signal Processing**
 - Correlated Double Sampling (CDS)
 - Programmable Black Level Clamping
- **Programmable Gain Amplifier (PGA)**
 - –6-dB to 42-dB Gain Ranging
- **10-Bit Digital Data Output**
 - Up to 36-MHz Conversion Rate
 - No Missing Codes
- **76-dB Signal-to-Noise Ratio**
- **Portable Operation**
 - Low Voltage: 2.7 V to 3.6 V
 - Low Power: 130 mW (typ) at 3.0 V
 - Standby Mode: 6 mW

DESCRIPTION

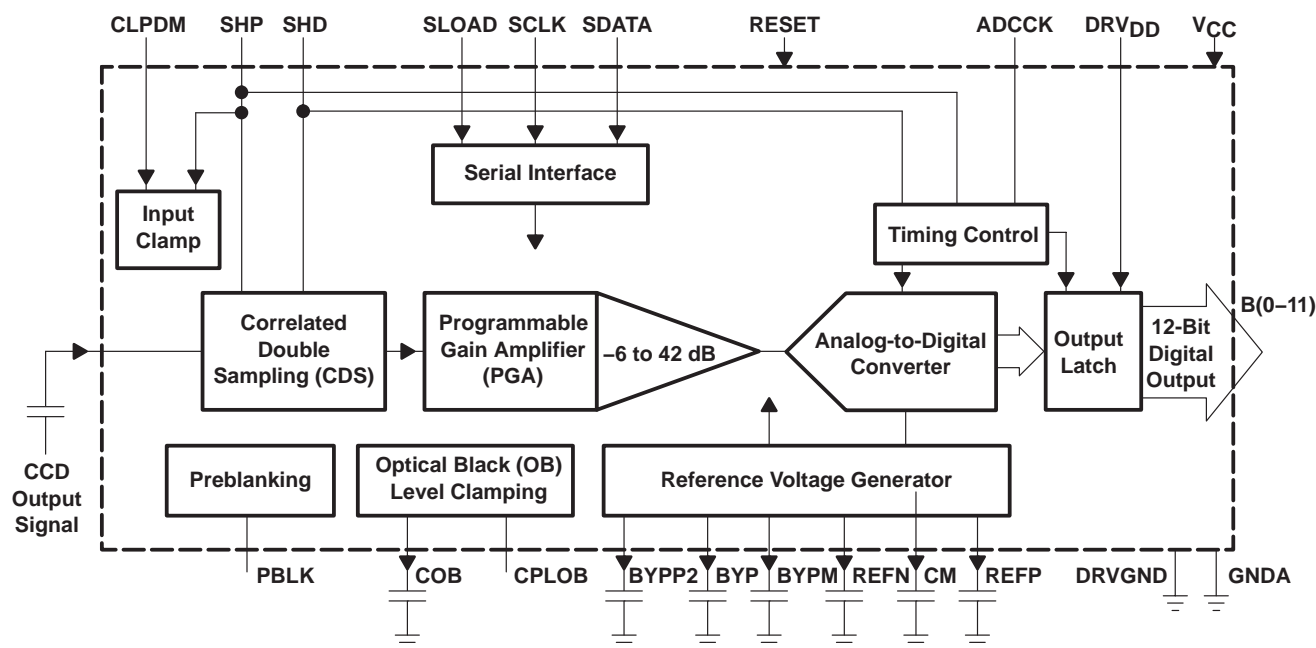
The VSP2232 is a complete mixed-signal processing IC for digital cameras that provides signal conditioning and analog-to-digital conversion for the output of a CCD array. The primary CCD channel provides correlated double sampling (CDS) to extract the video information from the pixels, a –6-dB to 42-dB gain with digital control for varying illumination conditions, and black level clamping for an accurate black level reference.

Input signal clamping and offset correction of the input CDS is also performed. The stable gain control is linear in dB. Additionally, the black level is quickly recovered after gain change.

The VSP2232Y is pin-to-pin compatible with the VSP2262Y (12-bit 20 MHz) one-chip product.

The VSP2232Y is available in a 48-pin LQFP package and operates from a single 3-V/3.3-V supply.

VSP2232 block diagram



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PACKAGING INFORMATION

Orderable part number	Status (1)	Material type (2)	Package Pins	Package qty Carrier	RoHS (3)	Lead finish/ Ball material (4)	MSL rating/ Peak reflow (5)	Op temp (°C)	Part marking (6)
VSP2232Y	Obsolete	Production	LQFP (PT) 48	-	-	Call TI	Call TI	0 to 85	VSP2232Y

⁽¹⁾ **Status:** For more details on status, see our [product life cycle](#).

⁽²⁾ **Material type:** When designated, preproduction parts are prototypes/experimental devices, and are not yet approved or released for full production. Testing and final process, including without limitation quality assurance, reliability performance testing, and/or process qualification, may not yet be complete, and this item is subject to further changes or possible discontinuation. If available for ordering, purchases will be subject to an additional waiver at checkout, and are intended for early internal evaluation purposes only. These items are sold without warranties of any kind.

⁽³⁾ **RoHS values:** Yes, No, RoHS Exempt. See the [TI RoHS Statement](#) for additional information and value definition.

⁽⁴⁾ **Lead finish/Ball material:** Parts may have multiple material finish options. Finish options are separated by a vertical ruled line. Lead finish/Ball material values may wrap to two lines if the finish value exceeds the maximum column width.

⁽⁵⁾ **MSL rating/Peak reflow:** The moisture sensitivity level ratings and peak solder (reflow) temperatures. In the event that a part has multiple moisture sensitivity ratings, only the lowest level per JEDEC standards is shown. Refer to the shipping label for the actual reflow temperature that will be used to mount the part to the printed circuit board.

⁽⁶⁾ **Part marking:** There may be an additional marking, which relates to the logo, the lot trace code information, or the environmental category of the part.

Multiple part markings will be inside parentheses. Only one part marking contained in parentheses and separated by a "~" will appear on a part. If a line is indented then it is a continuation of the previous line and the two combined represent the entire part marking for that device.

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