



# THE DATASHEET OF VSP2212Y





VSP2212

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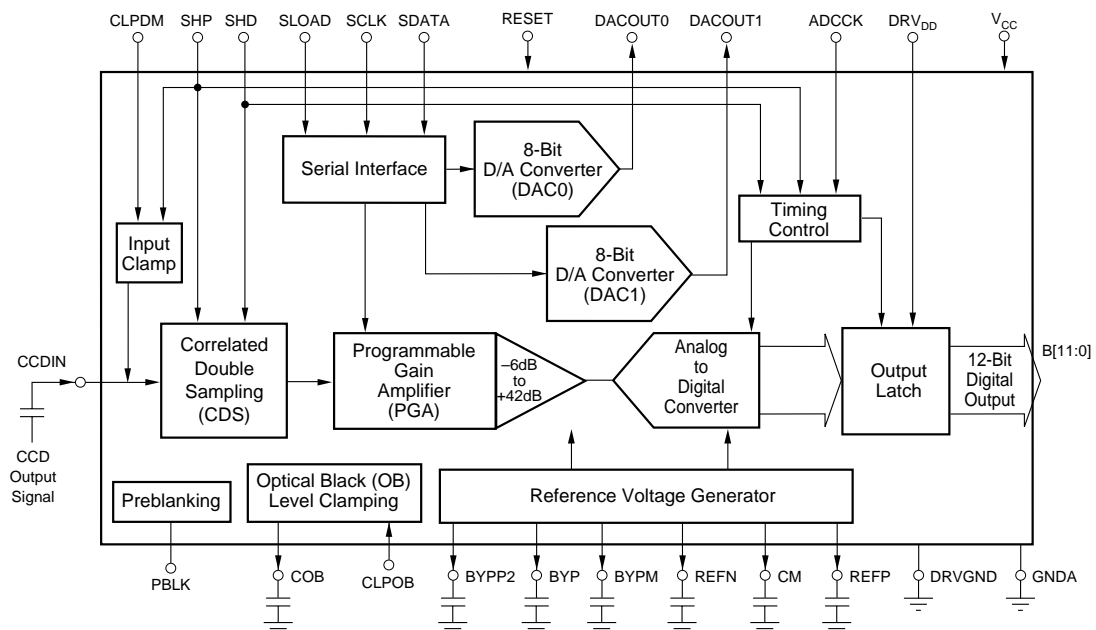
# CCD SIGNAL PROCESSOR For Digital Cameras

## FEATURES

- **CCD SIGNAL PROCESSING:**  
Correlated Double Sampling (CDS)  
Programmable Black Level Clamping
- **PROGRAMMABLE GAIN AMPLIFIER (PGA):**  
-6 to +42dB Gain Ranging
- **12-BIT DIGITAL DATA OUTPUT:**  
Up to 20MHz Conversion Rate  
No Missing Codes
- **79dB SIGNAL-TO-NOISE RATIO**
- **ON-CHIP GENERAL-PURPOSE 8-BIT DIGITAL-TO-ANALOG CONVERTERS**
- **PORTABLE OPERATION:**  
Low Voltage: 2.7V to 3.6V  
Low Power: 99mW (typ) at 3.0V  
Stand-By Mode: 6mW

## DESCRIPTION

The VSP2212 is a complete mixed-signal processing IC for digital cameras, providing 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 video information from the pixels, -6dB to +42dB gain ranging with digital control for varying illumination conditions, and black level clamping for an accurate black 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 two on-chip general-purpose 8-bit digital-to-analog converters allow you to obtain analog various control voltage, such as  $V_{SUB}$  control of CCD imager. The VSP2212 is the high-performance version of the VSP2000/2100 families. The VSP2212Y is available in an LQFP-48 package and the VSP2212M is available in a VQFN-48 package. Both products operate from a single +3V/+3.3V supply.



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**PACKAGING INFORMATION**

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead/Ball Finish (6)	MSL Peak Temp (3)	Op Temp (°C)	Device Marking (4/5)	Samples
VSP2212Y	NRND	LQFP	PT	48	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM		VSP2212Y	
VSP2212YG4	NRND	LQFP	PT	48	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM		VSP2212Y	

(1) The marketing status values are defined as follows:

**ACTIVE:** Product device recommended for new designs.

**LIFEBUY:** TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.

**NRND:** Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.

**PREVIEW:** Device has been announced but is not in production. Samples may or may not be available.

**OBSELETE:** TI has discontinued the production of the device.

(2) Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS), Pb-Free (RoHS Exempt), or Green (RoHS & no Sb/Br) - please check <http://www.ti.com/productcontent> for the latest availability information and additional product content details.

**TBD:** The Pb-Free/Green conversion plan has not been defined.

**Pb-Free (RoHS):** TI's terms "Lead-Free" or "Pb-Free" mean semiconductor products that are compatible with the current RoHS requirements for all 6 substances, including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, TI Pb-Free products are suitable for use in specified lead-free processes.

**Pb-Free (RoHS Exempt):** This component has a RoHS exemption for either 1) lead-based flip-chip solder bumps used between the die and package, or 2) lead-based die adhesive used between the die and leadframe. The component is otherwise considered Pb-Free (RoHS compatible) as defined above.

**Green (RoHS & no Sb/Br):** TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

(3) MSL, Peak Temp. - The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

(4) There may be additional marking, which relates to the logo, the lot trace code information, or the environmental category on the device.

(5) Multiple Device Markings will be inside parentheses. Only one Device Marking contained in parentheses and separated by a "~" will appear on a device. If a line is indented then it is a continuation of the previous line and the two combined represent the entire Device Marking for that device.

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

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