

## Product Bulletin

# TVP7000 and TVP7001 Triple Analog-to-Digital Converters

### High-Performance Video and Graphics Digitizer

The TVP7000 and TVP7001 triple analog-to-digital converters (ADCs) from Texas Instruments (TI) provide a complete video digitizing solution for PC graphics, HDTV and other high-definition video. The devices provide a range of benefits to digital video equipment, including higher image quality and increased resolution.

Three independently programmable ADC channels offer 8-bit digital pixel resolution with an output rate of 165 MSPS, or 10 bits at 110 MSPS. End products can

benefit from this high level of performance by adding features such as dynamic video capabilities and automatic level control. In addition, a high level of functional integration and support for a variety of signal formats saves space and system costs while providing design flexibility.

Among the many TVP7000 and TVP7001 ADC applications are:

- DLP and LCD business projectors
- Liquid crystal display (LCD), DLP®, and plasma display panel (PDP) TVs, monitors and projectors

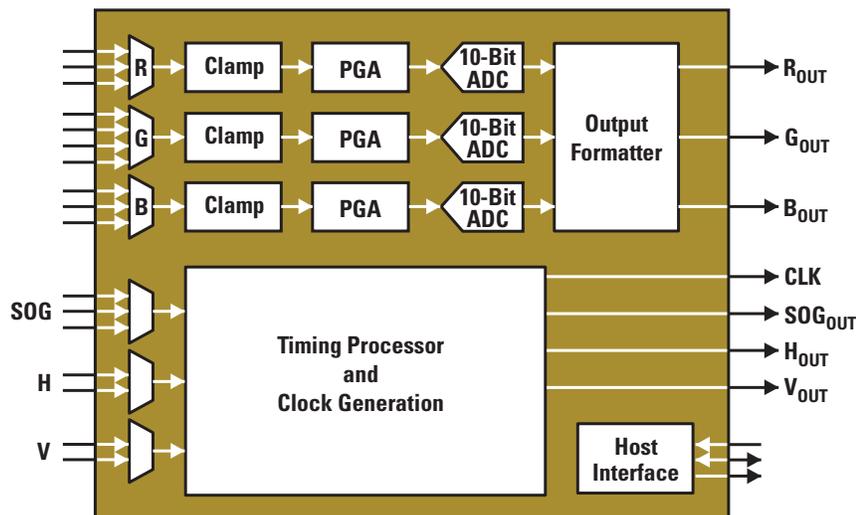
### High-Quality Digital Video

The TVP7000 and TVP7001 ADCs offer both performance and flexibility for video equipment manufacturers. With digitized pixel rates up to 165 MSPS, the devices provide video outputs of up to 1600 x 1200 ultra extended graphics array (UXGA) resolution at a 60-Hz screen refresh rate as well as HD video performance up to 1080p resolution. An output formatter provides both RGB/YCbCr 4:4:4 and YCbCr 4:2:2 color signals to keep board traces to a minimum, and a dedicated data clock permits easy latching of output data. By integrating an input multiplexer, the TVP700x family further eliminates the need for an external switch between component and/or VGA graphic connectors.

The TVP7000 and TVP7001 on-chip features help simplify design while providing flexible support for different types of systems. Three digitizing channels are available, each selectable for coarse or fine clamping from an external or internally generated source. The three channels also feature independent 1024-step programmable RGB/YpbPr offset control, 8-bit programmable gain amplifier (PGA), automatic level control, composite sync and support for ac/dc-coupled inputs. Analog slicing circuitry on the Y or G input supports sync-on-luminance or sync-on-green extraction. Integrated phase-locked loops (PLLs) with adjustable loops generate pixel

#### Key Features

- Three ADC channels with independently controlled clamp and gain
- 8/10-bit resolution, up to 165/110-MSPS sampling rate
- Supports up to 1600 x 1200 UXGA resolution at 60 Hz
- Up to 1080p analog HD performance
- Fully integrated PLL for pixel clock generation
- Supports RGB/YCbCr 4:4:4 and YCbCr 4:2:2 color outputs
- Industry-standard I<sup>2</sup>C programming interface
- Space-saving, thermally enhanced, Pb-Free, 100-pin PowerPAD™ HTQFP



The TVP7000 video digitizer's three channels each provide a high degree of flexibility through independently controlled clamp, PGA and ADC.

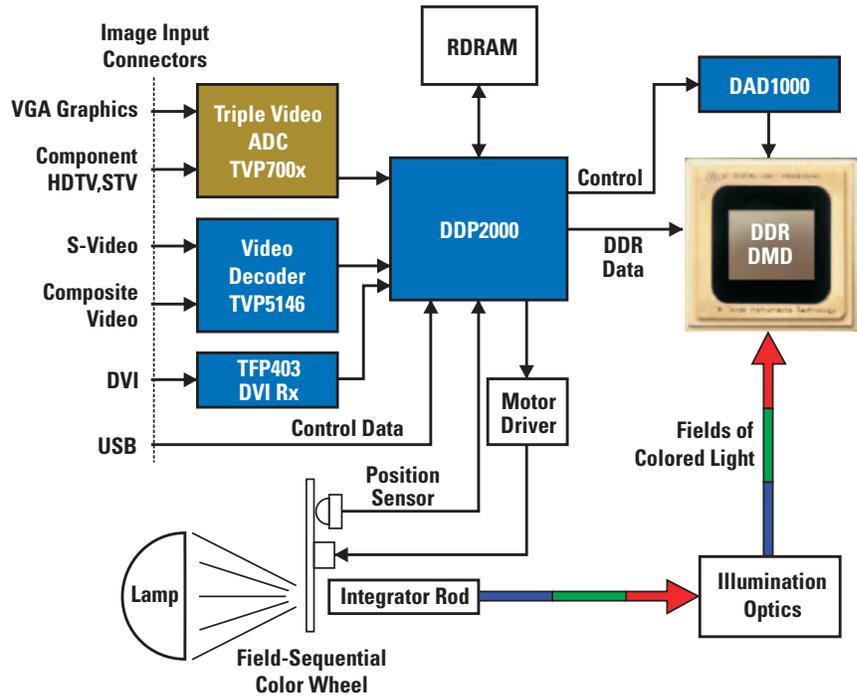
clock rates with low jitter of just 500 ps from horizontal synchronization (HSYNC) pulses. Pixel clock output frequencies range from 12 MHz to 165 MHz and PLL free running from an external clock is also supported. All programming, including both reading and writing to registers, is accomplished through an industry-standard I<sup>2</sup>C interface.

The TVP7000 and TVP7001 ADCs are powered from a 3.3-V and 1.8-V supply and are 100% pin-for-pin compatible. A Pb-Free, 100-pin lead-free PowerPAD™ high-temperature quad flatpack (HTQFP) package saves board space and efficiently dissipates heat.

### For More Information

For more information about using the TVP7000 or TVP7001 ADC in your next high-performance digital video application, contact your local TI field sales office or visit:

[www.ti.com/tvp7000](http://www.ti.com/tvp7000)



Typical DLP® technology projector application.

## TI Worldwide Technical Support

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