1 Description

STDP5300 is an all-in-one premium 10-bit LCD monitor controller with three inputs (HDMI 1.3a/DVI1.0, VGA, and Q-HDMI 1.3a/DVI) supporting resolutions up to WUXGA in a 128-pin PQFP package. The STDP5300 leverages STMicroelectronics' patented advanced image-processing technology as well as integrated ADC/PLL and Ultra-Reliable HDMI/DVI® receivers to deliver a high-quality solution for mainstream performance monitors.

STDP5300 inputs have both analog (VGA) and digital (DVI and HDMI) capabilities. Of the two digital inputs, the Q-HDMI receiver is capable of a maximum input clock frequency of 162 MHz. The Q-HDMI input implements a 1.2V electrical layer and HDMI/DVI receiver that is suitable for use with a 1.2V HDMI/DVI transmitter equipped in newer generations of graphics processors eliminating the need for 3.3V level shifting components.

The HDMI digital input implements a HDMI 1.3a compliant receiver supporting deep colors up to 12-bit sampling through a resolution of up to 1080p/WUXGA. The HDMI receiver is backward compatible with previous revisions of HDMI and DVI sources.

The high-speed VGA input implements a triple ADC/PLL with built-in clamping circuitry supporting both RGB and YPbPr signal formats up to a 205 MHz sample rate at 8 bits per color or a 162 MHz sample rate at 10 bits per color.

The STDP5300 directly interfaces with LVDS LCD panels through a dual-channel LVDS transmitter. In addition, STDP5300 includes an integrated x86 On-Chip Microcontroller (OCM) with SPI compatible interface, advanced color control features, a multicolor proportional font OSD engine, and a number of system I/O components. Along with high quality and reliability, the STDP5300 also provides a very low cost system design by reducing the number of system components for the performance monitor design.

Table 1. Device summary

Part number	Input			Output		HDCP
	VGA/YPbPr	HDMI 1.3a	Q-HDMI	Resolution	LVDS	
STDP5300	205 MHz	222.75 MHz	162 MHz	1920x1200 (WUXGA)	Yes	No
STDP5300H	205 MHz	222.75 MHz	162 MHz	1920x1200 (WUXGA)	Yes	Yes

2 Feature attributes

- Advanced color controls
  - TV style color controls including hue and saturation
  - Faroudja RealColor provides six axis color controls, flesh-tone adjustment, gray guarding, and image enhancement
  - Multiple-bin ACC extends the dynamic range of the display
- Analog RGB input
  - 205 MHz 8-bit triple ADC or 162 MHz 10-bit triple ADC supports up to 1080p video or 1920x1200 (WUXGA) resolution
  - Composite-sync and Sync-on-Green (SOG) support
  - Instant Auto for automatic phase and clock adjustment
- HMDI 1.3 compliant input
  - Supports resolutions up to 1080p/WUXGA
  - Deep color and wide gamut support: 12-bit HDMI input at YCC 4:4:4
  - Backwards compatible with DVI
  - Supports LPCM (up to 2 channels) and compressed audio (up to 8 channels when SPDIF output is selected)
  - Supports integrated HDCP 1.3 (STDP5300H only)
- Q-HDMI input
  - Operating speed of 162 MHz
  - Supports deep color modes for link speeds of 162 MHz or less
  - Supports LPCM (up to 2 channels) as well as 7.1 encoded audio formats as per IEC69137
  - Supports integrated HDCP 1.3 (STDP5300H only)
- Intelligent image processing™
  - Programmable coefficients for user sharpness control
  - Real Recovery™ function provides full color recovery image for refresh rates higher than those supported by the LCD panel
- x86 OCM
  - High-performance x86 MCU with on-chip RAM and ROM
  - Unified memory architecture simplifies chip programming
  - Three DDC2Bi ports on VGA, DVI, and HDMI inputs with DMA buffer to internal RAM (DDC buses can function as GPIO)
- On-chip OSD controller
  - 1, 2, and 4-bit per pixel character cells
  - Blinking, transparency, and blending
  - Supports two independent OSD menu rectangles
- Dual-channel LVDS transmitter
  - Support for 8 or 6-bit LVDS (with high-quality dithering)
  - Programmable signal amplitude and driving strength

- Highly integrated System-on-Chip (SOC)
  - On-chip reset circuit to eliminate external reset IC
  - Broader PWM range from 50 Hz ~ 1 kHz with 256 steps adjustable duty cycle
  - LED direct drive pins
  - Programmable dithering block
  - HDCP key stored in embedded OTP ROM

3 Ordering information

Table 2. Order codes

Part number	Description
STDP5300-AC	128-pin PQFP
STDP5300H-AC	128-pin PQFP with HDCP

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK® packages, depending on their level of environmental compliance. ECOPACK® specifications, grade definitions and product status are available at: *www.st.com*. ECOPACK® is an ST trademark.

4 Revision history

Table 3. Document revision history

Date	Revision	Changes
06-Dec-2010	1	Initial release.

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