



VX8899

HIGH DEFINITION VIDEO PROCESSOR AND MULTI FORMAT CONVERTER

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1 OVERVIEW

1.1 DESCRIPTION

VX8899 is an advanced high definition video processor and multi format converter IC. It consists of video input format converter, 3-D deinterlace processor, picture enhancement and color processing, the scaling engine specially designed for video apps, T-con for LCD panel timing control and video output format converter. It receives digitized interlaced video stream (BT. 656 or BT. 601) from video decoder or MPEG video decoder. It also can receive RGB/YUV 24-bit video input up to 1080P(BT.1120). It also supports CMOS Bayer format data. The maximum input video size is up to 1080I or 1080P. The VX8899 can perform high quality picture enhancement such as video noise reduction, sharpening, black-level / white-level extension, gamma correction, and converts it into non-interlaced formats for direct display on progressive devices, such as LCD displays, DTV, projectors, or PC monitors. The output resolution covers from 320x240 to 1920x1080. VX8899 provides theater quality progressive scan video with VXIS's innovated *Motion Adaptive-3D Deinterlace Algorithm*, 3-2 pull down with automatic film mode detection, Edge Preserving Pixel Interpolation, frame-rate conversion, synchronization regeneration, and automatic source mode detection.

The VX8899 can perform various video format conversion, such as interlace to progressive, progressive to interlace, interlace to interlace, progressive to progressive. And it can do different frame rate and frame size convert between input and output video.

There are some functions for surveillance application, such as auto white balance, noise reduction, motion detection, CMOS raw bayer

input format converter.

The font-based on-screen-display (OSD), and universal programmable timing control makes it become a highly integrated, most cost-efficient video processor.

1.2 APPLICATION

- Video format converter
- Surveillance
- Portable DVD
- Car TV
- Multimedia panel
- Small/middle size LCD TV
- Photo frame

1.3 FEATURES

- Support Various Digital Video Input Formats
 - 8-bit interlace ITU-R BT.656
 - 8-bit progressive BT.656
 - 8-Bit ITU-R BT.601 + Horizontal Sync + Vertical Sync
 - 8-bit Bayer format CMOS input, up to 1920x1080
 - 24-bit RGB/YUV/BT.1120 progressive input
 - 16-bit Y/UV input
 - Resolution up to 1080i/1080P
- Support Various Digital Video Output Formats
 - 24/18/16-Bit RGB + Horizontal Sync + Vertical Sync
 - 24/18/16-Bit 4:4:4 YUV + Horizontal Sync + Vertical Sync
 - 24-Bit 4:4:4 YPbPr + Horizontal Sync + Vertical Sync
 - 16-Bit 4:2:2 YUV + Horizontal Sync + Vertical Sync
 - 8-bit YUV progressive / interlace
 - Resolution up to 1080i/1080P
- Simultaneously progressive BT.656 output
- Frame rate up/down conversion
- Motion-Adaptive 3D Deinterlace
- Edge-Preserving Pixel Interpolation
- Selectable area Motion detection
- Auto white balance
- Cross color suppression
- Automatic Video Source Detection
- Embedded Scaling Engine, Supporting progressive Output Resolution from 320X240 to 1920X1080
- Brightness, Contrast, Saturation, and Hue Adjustment
- Color Transient Improvement, Adaptive Black-Level Extension, Skin Tone Enhancement.
- Video 3D Noise Reduction
- Frequency Directive Picture Sharpening
- 3-Channel 10-Bit Build-In Color gamma Look-Up Table for Video Fine-Tune
- Host Interface Compatible with Two-Wire IIC, Serial Interface
- Support SDRAM 1Mx16 to 4Mx32
- Four different host interface chip addresses selection.
- OSD with 128 Build-in and 64 Programmable Font and Attribute Table, 16 Colors at same Time from 16,777,216-Color Template, Blinking, and Blending

- R/G/B output port swap & rotation control
- R/G/B input port swap & rotation control
- 8 pins of programmable panel timing control signals
- EEPROM register data storing and access for initialization setting
- One 20 MHz crystal, or from CCIR input clock or from RGB input clock as internal reference clock
- 1.8V / 3.3V power supply with 3.3V digital I/O
- 144-Pin LQFP