VX1531

Preliminary Product Brief   High Quality Progressive Video Processor

DESCRIPTION

VX1531 is VXIS's first 5-in-1 progressive video processor IC, consists of VXIS's third generation 3-D video deinterlacer, picture enhancement engine, the scaling engine specially designed for video apps – the Relács, TV video encoder, and analog TV-on-PC switching circuits. It receives digitized interlaced video stream from NTSC / PAL / SECAM video decoder or MPEG video decoder, performs high quality picture enhancement such as video noise reduction, sharpening, black-level extension, and Gamma correction, and converts it into non-interlaced formats for direct display on progressive devices, such as LCD displays, HDTV, projectors, or PC monitors. Its output resolution covers conventional VESA standard formats including VGA (640x480), SVGA (800x600), XGA (1024x768), SXGA (1280x1024), and WSXGA (1440x1024). With VX1531's standalone application (no external DRAM required), VX1531 provides high quality single-field progressive-scan video with VXIS's *Edge-Preserving Pixel Interpolation algorithm* for most cost-effective application. For the application where the cost of optional external SDRAMs is affordable, VX1531 provides theater quality progressive-scan video with VXIS's *Motion-Adaptive 3-D Deinterlace Algorithm*, arbitrary ratio period-smoothened frame-rate conversion, synchronization-regeneration, and automatic source mode detection. The 3-channel digital to analog output converters (DAC), font-based on-screen-display (OSD), TV-on-PC switches, and TV video encoder were all intended to be built-in in VX1531 to make it become a highly integrated, most cost-efficient, and of course, a high-end progressive video processor.

APPLICATION

- Progressive HDTV
- Progressive DVD Player
- LCD TV
- PDP TV
- Projection TV
- Multimedia Monitor
- TV-BOX

APPLICATION DIAGRAM
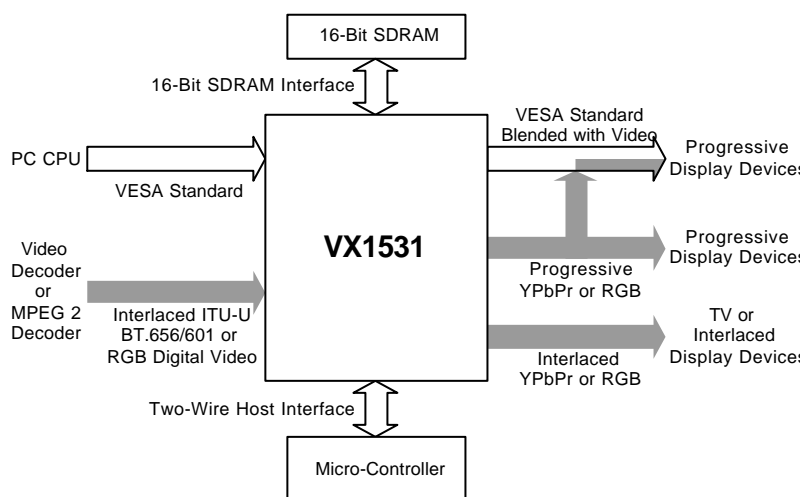
FEATURES

- Support Various Digital Video Input Formats
  - ITU-R BT.656
  - 8/16-Bit ITU-R BT.601 + Horizontal Sync + Vertical Sync
  - 24-Bit RGB + Horizontal Sync + Vertical Sync
  - 24-Bit 4:4:4 YUV + Horizontal Sync + Vertical Sync
  - NTSC / PAL / SECAM / Square-Pixel
  - Non-Interlaced Video Input in VCR Pause Mode

- Support Various Digital Video Output Formats
  - 30/24/18/16-Bit RGB + Horizontal Sync + Vertical Sync
  - 30/24/18/16-Bit 4:4:4 YUV + Horizontal Sync + Vertical Sync
  - 30/24/18/16-Bit 4:4:4 YPbPr (with Embedded Horizontal and Vertical Sync on Y)
  - 16-Bit 4:2:2 YUV + Horizontal Sync + Vertical Sync
  - 24-Bit 4:4:4 Interlaced YPbPr (with Embedded Horizontal and Vertical Sync on Y)

- Build-In Video Encoder Supporting Interlace CVBS and S-Video Output

- Support TV-on-PC with Build-In Analog Switching Circuits (Analog PIP or APIP)

- 3-Channel 10-Bit Build-In DAC which Provides Analog Video Output

- Arbitrary Ratio Period-Smoothened Frame-Rate Conversion

- Motion-Adaptive 3D Deinterlace

- Edge-Preserving Pixel Interpolation

- Automatic Video Source Detection

- Relács, Embedded Scaling Engine Supporting Output Resolution from VGA (640x480), SVGA (800x600), XGA (1024x768), SXGA (1280x1024), to WSXGA (1440x1024)

- Brightness, Contrast, Saturation, and Hue Adjustment

- Color Transient Improvement

- Adaptive Black-Level Extension

- Video Noise Reduction

- Frequency Directive 2D Picture Sharpening

- 3-Channel 10-Bit Build-In Color Look-Up Table for Video Fine-Tune

- EZ-Gamma Programming Hardware Support

- Synchronization Re-Generation to Perform Stable Video with VCR Operations, FF, RW, and PS.

- Host Interface Compatible with Two-Wire IIC, Serial Interface

- Build-In OSD with Programmable Font and Attribute Table, 16 Colors at same Time from 16,777,216-Color Template, Blinking, and Blending

- External OSD Interface

- 5-Volt Tolerant Digital I/O

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BLOCK DIAGRAM