DESCRIPTION

VX1120A is a highly integrated solution for video capturing and progressive video displays. VX1120A can accept analog NTSC/ PAL CVBS, S-Video, or YPbPr video from TV tuner, DVD, or VCR sources, including weak and distorted signals. Automatic gain control (AGC) and 10-bit 3-channel A/D converters provide high-resolution video output, and automatic video source detection let user easy to use for various signal source. Proprietary 5-line high quality adaptive comb filter and de-interlace unit convert interlaced video sources into non-interlaced formats for direct display on progressive TV, monitors, and projectors. Output D/A converters and OSD are built in to support a direct connect to display devices. Various formats of digital output are also provided for further digital video processing.

VX1120A can be controlled via 2-wire micro-controller interface (full write / read capability for all programming registers).

FEATURES

Video Decoder

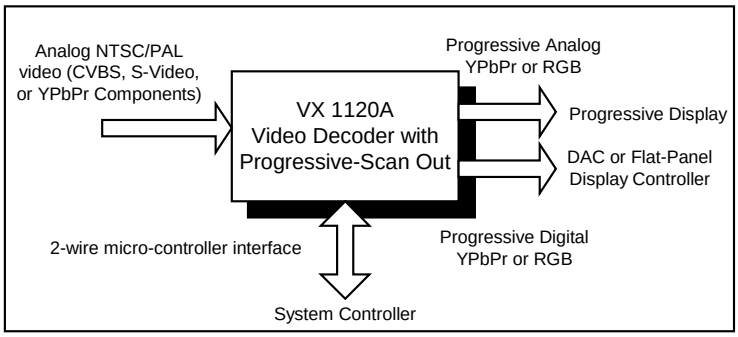
- Composite, S-Video, or color difference (YPbPr) inputs: NTSC and NTSC-Japan; PAL (B, D, G, H, I, M, N, Nc).
- 8 Analog inputs: 8x CVBS, 3x S-video, or 1x 3-wire YPbPr.
- Three 10-bit A/D converters with fixed sampling clock.
- Three analog preprocessing channels with digitally controlled AGC/clamp.
- Support 3 off-chip anti-alias filters.
- Automatic gain control (AGC).
- Automatic Clamp Control (ACC) for CVBS, S-video, and YPbPr.
- Automatic chroma gain control.
- Horizontal and vertical Sync Detection.
- Digital luma and chroma phase-locked loops for greater timing /carrier accuracy.
- On-Chip line synchronized Clock Generation according ITU601.
- Require only one crystal (20 MHz) for all standards.
- Automatic detection of 50/60Hz field frequency, and automatic switching between standards PAL, PAL (Nc), PAL M, and NTSC.
- Adaptive comb filter for two dimensional chrominance/ luminance separation.
- PAL delay line for correcting PAL phase errors and chroma noise cancellation.
- Luma and chroma sharpening.
- Brightness, contrast, saturation, hue and adaptive black level extension adjustments.

Deinterlace and I/O Interface

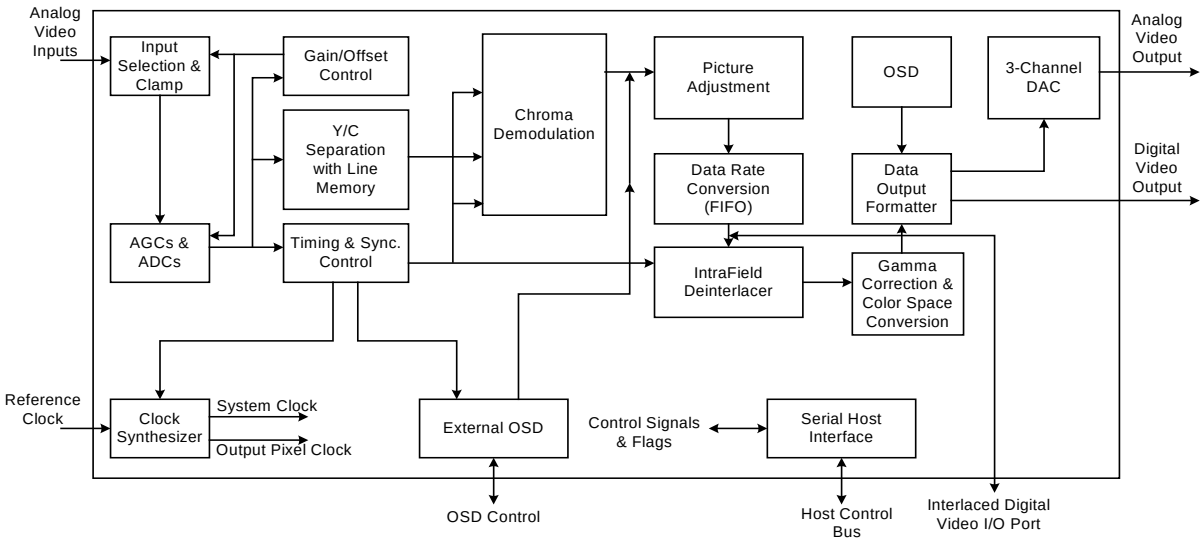
- Interlaced digital video input format:
  - YUV 4:2:2 8-bit with embedded timing reference code (BT.656) or separated H/V-Sync.
- Interlaced digital video output format:
  - YUV 4:2:2 8-bit/16-bit with embedded timing reference code (BT.656) or separated H/V-Sync.
- Progressive digital video output format:
  - 24/18/16/15-bit RGB.
  - 24/18/16/15-bit YPbPr.
- Support square pixel output format.
- One easy to use Y channel look-up tables for programmable Gamma correction.
- 3-channel DAC for progressive analog video output.
  - RGB (VGA).
  - YPbPr.
- OSD with both built-in and programmable font table.
- External OSD with both RGB-BOX and RGB-BOX-INTENSITY Modes
- MacroVision copy right detection
- Two-wire serial controller Interface.
- Support 640x480, 720x480, 800x480.
- 5-V tolerant digital I/O.

APPLICATIONS

- Progressive TV
- LCD TV
- PDP TV
- Projection TV
- DVD Recorder
- Advanced Video Scan Converter
- Multimedia PC



BLOCK DIAGRAM



BLOCK DESCRIPTION

- Host Interface: Two-wire serial interface for connecting to host controller (I2C-compliant).
- Clock Synthesizer: On-chip PLL's generate all needed clocks from a single external clock source.
- Input Section & Clamp: Analog video input section which selects signals from six analog video pins, and clamps them to appropriate DC level.
- AGC' s & ADC' s: Automatic Gain Control and A/D converters.
- Gain/Offset Control: Digitally controls analog clamp and AGC parts to adjust level of input video signals.
- YC Separation: propriety 5-line comb filter with non-linear enhancement.
- Timing & Sync Control: Generates proper synchronization and carrier frequency/phase information from input video signal.
- Chroma Demodulation, Hue/Saturation Control, Chroma Enhancement & Noise Reduction, Luma Enhancement & Brightness /Contrast Control: Digital picture processing and adjustment.
- Data-rate Conversion: Convert data rate from carrier-frequency based clock domain to output pixel clock domain.
- External OSD: Receive and synchronize the on-screen-display generated from external processor
- Intrafield Deinterlacer: Converts interlaced video to progressive video. Use propriety spatial interpolation algorithm and needs no external frame memory.
- Gamma Correction & Color Space Converter: Converts pixels from YUV domain into RGB or YPbPr domain. Gamma correction is fully user-programmable.
- OSD: On-Screen-Display. It accepts an RGB or YUV video and addes OSD patterns on it.
- Data Output Formatter: Arranges pixels into desired digital and analog format and timing.
- DAC: 3-channel 10-b D/A converters.

PACKAGE

- 100-pin PQFP

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