SiI 8200
Advanced Video Processor

Applications

- LCD Televisions
- Plasma Televisions
- Integrated DTVs
- Multi-function Monitors
- Projection Televisions

Key Features

- 12-input TV Front-end Processor
- Video Decoder with 3D Comb Filter
- Dual Video Processing Paths for PIP
- PIP/POP Processor
- High-Quality Scaling
- Motion Adaptive Video Deinterlacing
- ITU-R BT.656 Input
- Frame Rate Conversion
- Advanced Image Processing
- Integrated 166MHz 32-bit MIPS RISC Microprocessor
- 24-bit OSD Processor
- DAC/TTL/LVDS Output

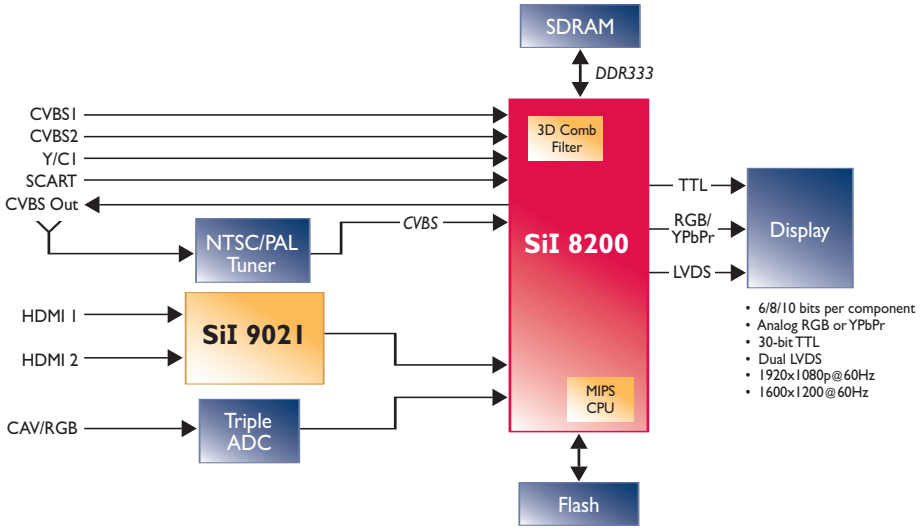
The Silicon Image SiI 8200™ video processor is a fully integrated system solution for digital televisions and integrated HDTVs that sets new price performance standards for the digital TV market. The SiI 8200 integrates a complete front-end processor that handles a combination of up to 12 composite, S-video, and component video signals. These video inputs support worldwide NTSC, PAL, and SECAM television standards making a single worldwide TV platform possible.

An additional two digital video ports support high-definition television resolutions to 1920x1080 progressive scan at 60 Hz, and PC graphics resolutions to UXGA (1600x1200 @ 60 Hz). When combined with two standard definition ITU-R BT.656 inputs, the SiI 8200 performs fully orthogonal PIP/POP processing using an integrated video compositing processor. In addition to any for the four digital video inputs, one of the 12 standard definition inputs can be selected for picture-in-picture (PIP) or picture-on-picture (POP) processing. The PIP processor has fully programmable main and sub picture location and size.

The SiI 8200 incorporates state-of-the-art 3D motion adaptive video de-interlacing, advanced video scaling, and frame rate conversion between 24 fps film rate, 50 Hz and 60 Hz video rates. Advanced image processing controls include programmable hue, saturation, brightness, and contrast adjustments. Video and graphics can be combined simply using the built-in YCbCr <-> RGB color space converter.

With an integrated 32-bit MIPS RISC microprocessor, the SiI 8200 is a complete single-chip solution that includes 14 Kbytes of on-board cache and an integrated SDRAM controller. The double data rate (DDR333) SDRAM controller can be configured as 16- or 32-bit bus and supports 8 MB to 64 MB of total installed SDRAM. The programmable on-screen display (OSD) engine supports 24-bit font and bitmap-based graphics with 3 independent windows.

For high-fidelity displays that support 10-bit color depths, the SiI 8200 has integrated 8- to 10-bit gamma expansion. The SiI 8200 has TTL, LVDS, and 10-bit DAC outputs for direct interface to most popular CRTs, LCD panels, and plasma panels.



SiI 8200 Features

Advanced Video Processor

Standard Definition (SD) Video Inputs

- 12 video ports configurable as composite, S-video and SD component inputs
- Supports NTSC, PAL and SECAM standards
- Built-in video decoder with 3D comb filter

Digital Video Inputs

- Two (2) 24-bit digital video input ports at 165 MHz
  - HDMI to 165 MHz,
  - HD component video to 165 MHz,
  - PC graphics to UXGA (1600x1200)
- Two (2) 8-bit ITU-R BT.656/BT.601 compliant video input ports

Advanced Video Scaling

- Bi-cubic scaling
- Moiré cancellation
- 4:3 <-> 16:9 panoramic scaling

Video Deinterlacing

- Motion adaptive 3D de-interlacing for 1080i, NTSC, PAL, SECAM signals
- Includes 3D motion adaptive noise reduction

Frame-rate Conversion

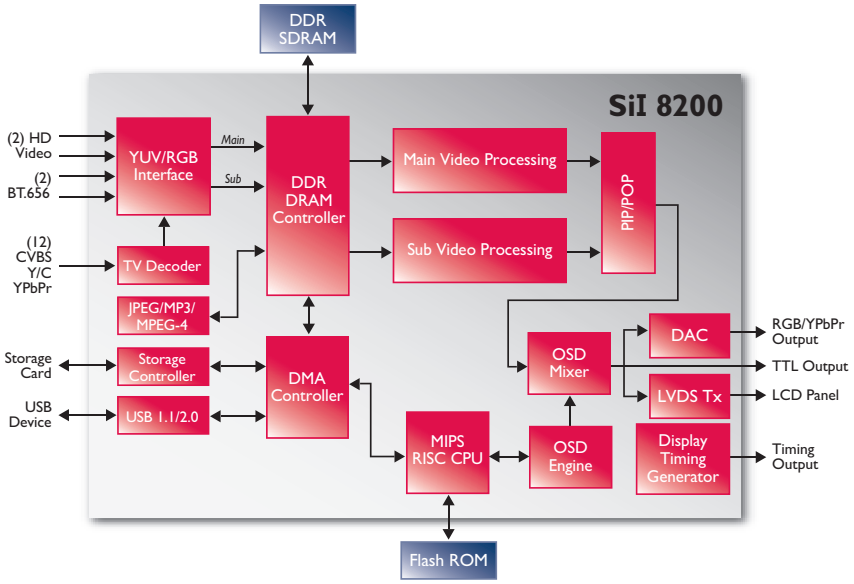
- 50 Hz <-> 60 Hz video rate conversion
- Inverse 2:2 & 3:2 pull-down for film material

Picture In Picture/Picture On Picture (PIP/POP)

- PIP or POP on any combination of two SD or HD inputs
- Fully-programmable main- & subpicture location & size
- Video over graphics or graphics over video

Flexible Image Processing

- 2D edge enhancement and noise reduction
- White and black level expansion fills full color range
- Dark and gray area UV suppression reduces visible color noise
- Hue, saturation, brightness and contrast controls
- RGB <-> YCbCr color space conversion
- PC compliant sRGB color adjustments



Integrated RISC Microprocessor

- 32-bit MIPS RISC instruction set architecture
- Programmable clock from 600 kHz to 166 MHz
- 14 kB cache memory
- Watch-dog timer
- Real-time clock
- Industry-standard EJTAG debugging port
- Up to 4 MB program execution memory (Flash)
- Built-in 16 kByte boot ROM for first-time programming

Built-in SDRAM Controller

- Configurable 16-bit or 32-bit bus
- Supports DDR333 8 MB to 64 MB total installed SDRAM

Multimedia Engines

- MPEG-1, Layer 3 (MP3) audio decoder
- Windows Media Audio (WMA) decoder
- JPEG encoder and decoder
- MPEG-4/simple profile video encoding and decoding

Programmable OSD Engine

- Font- or bitmap-based graphics
- 256 characters per font
- 1, 2, 4, 8, 16, 24-bits per pixel graphics
- Three independent OSD windows
- VBI decoder – closed caption, V-Chip, teletext level 2.5, CGMS-A
- Built-in hardware cursor

Display Outputs

- 8- to 10-bit gamma correction table
- 10- to 6-bit or 10- to 8-bit temporal-spatial color dithering
- Horizontal & vertical flip for projection systems
- Single CVBS output port for NTSC, PAL, SECAM monitor output
- Dual-channel LVDS transmitter
- 18-bit, 24-bit, or 30-bit TTL (RGB) output port
- Triple 10-bit DAC configured as RGB or YCbCr color with sync processing
- Resolutions to 1920x1080 at 60 Hz or 1600x1200 (UXGA) at 60 Hz
- 4-channel PWM backlight intensity control
- LCD panel power-down sequence control

Peripheral Interfaces

- I^2C bus master controller
- Storage card interface supports
  - SD cards
  - Compact Flash card
  - PC Card flash drive
  - MMC card
  - Memory Stick
- USB 1.1 host interface
- UART
- GPIO
- EJTAG debug port

Package

- 388-pin PBGA

Part Number - SiI8200CBV

©2005 Silicon Image, Inc. All rights reserved. Silicon Image, the Silicon Image logo, SiI, SiI 8200 and TMDS are trademarks or registered trademarks of Silicon Image, Inc. in the United States and other countries. Other trademarks are the property of their respective holders. Product specifications are subject to change without notice. Printed in the U.S.A. SiI PB-0065 12/05

Silicon Image, Inc.
1060 E. Arques, Sunnyvale, CA 94085
T 408.616.4000 F 408.830.9530
www.siliconimage.com