

## Single-Chip SD/HD Video Processor

### Summary

The ABT2010, Anchor Bay's second-generation video processing chip, is ideally suited for deinterlacing and format conversion applications in digital displays, AV Receivers, DVD, HD-DVD, and Blu-Ray player/recorders. The chip features all of the processing power of Anchor Bay's Video Reference Series™ (VRS™) technologies, including Anchor Bay's proprietary Precision Deinterlacing™ which provides five-field motion adaptive and edge adaptive processing for an artifact-free viewing experience; 10-bit Precision Video Scaling II™ that can independently scale an image horizontally and vertically to achieve outstanding picture quality for today's high-definition video displays and MPEG noise reduction and picture enhancement. It also includes Progressive Re-Processing (PReP™) technology, a breakthrough processing method that reverts the progressive video signal output from source equipment to its original interlaced format, and then converts the interlaced signal to progressive format using Precision Deinterlacing. The ABT2010 supports HDMI 1.3 with 12-bit output resolutions.

### Applications

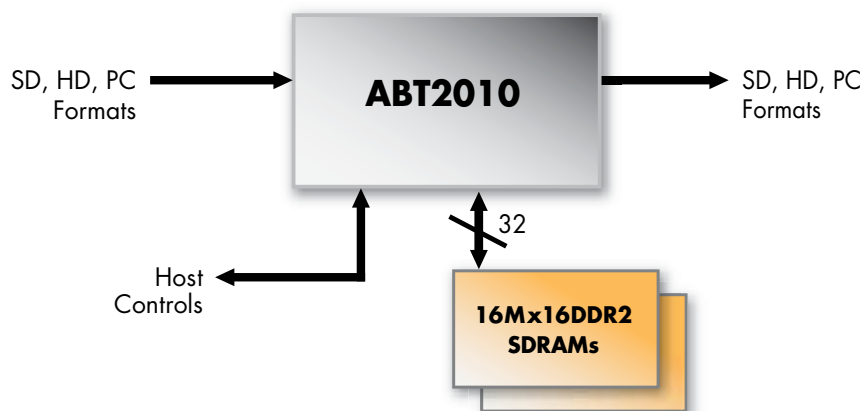
- Digital Displays
- AV Receivers
- DVD Players/Recorders
- HD-DVD Players/Recorders
- Blu-Ray Players/Recorders
- HDTV Set-Top Boxes
- Video Processors/Switchers
- Other Digital Media Devices

### Features

- 10-Bit Precision Deinterlacing™ of SD/HD
- 10-Bit Precision Video Scaling II™ for Up-conversion to 1080p and Down-conversion to 480i
- SD/HD Noise Reduction and Picture Enhancement
- PReP™  
Industry's first technology to restore progressive video signals to their original interlaced formats and then converts the interlaced signal to progressive format using Precision Deinterlacing
- CEA-861D Compliant Timing
- On Screen Display



System Block Diagram



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### Precision Deinterlacing

- Supports 480i, 576i, 1080i50, 1080i60
- Arbitrary cadence detection (any-to-any) to detect non-standard cadences
- Five-field motion adaptive deinterlacing
- Edge-adaptive processing to produce smooth diagonal edges
- Three-frame video processing with low-latency gaming modes
- Reliable 2:2 pull-down detection for 50Hz video standards
- Bad edit detection to minimize artifacts caused by sequence breaks in film content
- Detection of multiple source types within a frame – for example, video titles over film
- Detection of 2:2 to/from 3:2 crossfades and out of phase 3:2 crossfades
- Detection modes – automatic, video, film-bias, forced 3:2 and 2:2
- Cadence detection of 480p, 576p, 720p, and 1080p sources

### Scaling

- Anchor Bay's award-winning vertical and horizontal up and down scaler with true 10-bit processing
- Accepts SD, HD, and PC inputs including 1080p
- Upscales to 1080p and downscales to 480i format
- Automatic chroma upsampling error detection and correction
- Panoramic stretch mode to support 4:3 content on a 16:9 display
- Tearless frame rate conversion
- Full aspect ratio control
  - Supports multiple input aspect ratios
  - Supports multiple display aspect ratios
- Zoom, pan, and border functions

### PReP

- Industry's first technology to restore progressive video signals to their original interlaced formats
- Processes formats including 480p, 576p, 1080p50, and 1080p60
- Users may choose to disable PReP manually for all formats
- Utilizes Precision Deinterlacing to eliminate artifacts

### MPEG Noise Reduction

- Mosquito noise reduction for SD/HD formats
- General noise reduction for SD/HD formats

### Picture Enhancement

- Detail enhancement to increase fine detail or reduce noise for overly enhanced images
- Edge enhancement to sharpen edges or to reduce overly enhanced edges

### Picture Controls

- Brightness, contrast, saturation, hue, sub-pixel YC delays
- Output black level controls
- Gamma
- Calibration controls including 3x3 matrix

### Input

- 30-bit 4:4:4 RGB/YCbCr or 20-bit YCbCr
- Video Formats: 480i, 576i, 480p, 576p, 720p, 1080i, 1080p (including 1080p/24sF)
- PC Formats: VGA through SXGA
- Separate and embedded syncs including DE generation (including BT.656)

### Output

- 24/30/36-bit 4:4:4 RGB/YCbCr or 20-bit/24-bit YCbCr
- Video Formats: 480i, 576i, 480p, 576p, 720p, 1080i, 1080p (including 1080p/24sF)
- PC Formats: VGA through SXGA
- Separate and embedded syncs (including BT.656)

### On-Screen Display (OSD)

- Character-based OSD supports transparency with adjustable foreground/background color
- 256-character set with 12 x 24 or 128-character set with 24 x 24 characters
- 128 x 32 character map which can be freely positioned anywhere on the screen

### Controls and Clocks

- I<sup>2</sup>C-compliant serial interface
- ABT Serial™ interface – four-wire fast serial interface of up to 10.0 MHz
- Integrated PLLs

### Memory

- DDR2 SDRAM
  - 256 Mbit (16M x 16)
  - Larger sizes will be supported (512 Mbit, 1024 Mbit)
- Flexible memory interface
  - 1 device – SD deinterlacing
  - 2 devices – HD deinterlacing

### Test Pattern Generator

- Flexible test pattern generator under software control to provide reference test patterns for calibrating display

### Audio Delay

- 10-channel I<sup>2</sup>S audio support (HDMI 1.3)
- Supports up to 640 ms of audio delay
- Multiple formats including multi-channel audio (compressed, PCM)

### Package

- 316-TEPBGA (27 mm x 27 mm)

### Voltage

- 1.0V Core, 3.3V I/O, 1.8V Memory

### AVAILABILITY

- Sampling Q3 2007

