FLI2310

Single-chip digital video format converter

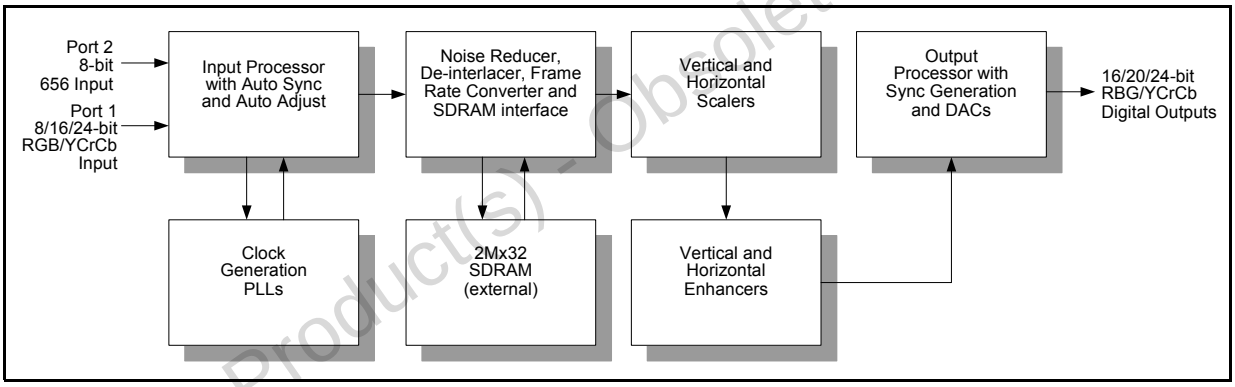
Data Brief

Features

- Digital input
- Interlaced/progressive output
- Motion Adaptive Noise Reduction
- Cross Color Suppressor (CCS)
- Per-pixel MADi/patented FilmMode processing
- DCDi™ by Faroudja®
- High-quality fully programmable 2D scaler
- TrueLife™ ENHANCER
- Package: 208-pin PQFP

Applications

- LCD TV
- PDP TV
- LCOS/DLP® projection TV
- Digital projectors



1 Description

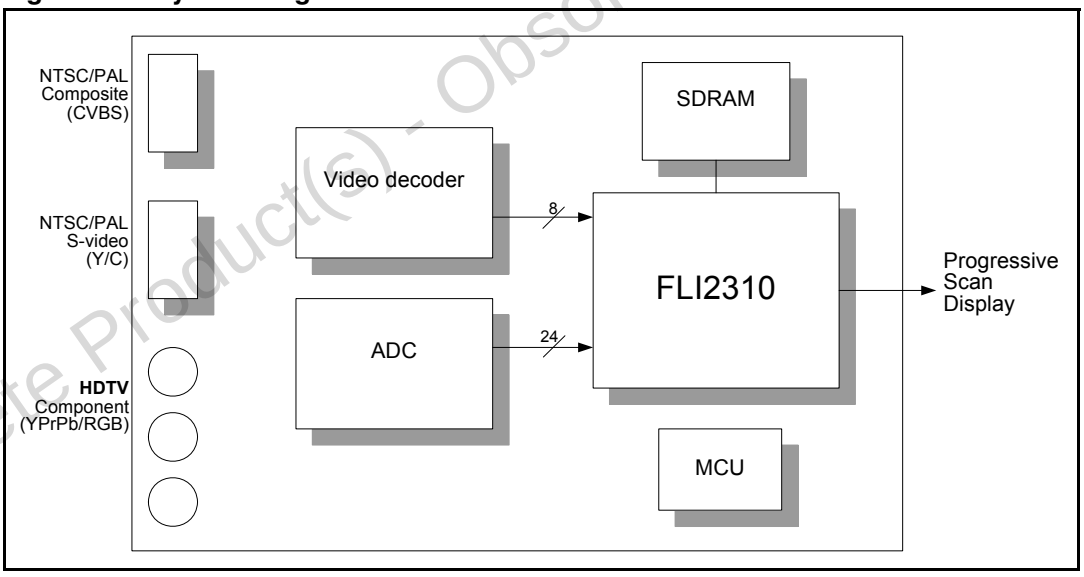
The FLI2310 is a highly-integrated digital video format converter for flat panel TV and digital projectors. It uses patented de-interlacing and post-processing algorithms from Faroudja.

The FLI2310 can capture and process standard definition PAL, NTSC data, 1080i and 720 High Definition data, PC graphics data, and most non-standard resolutions in either interlaced or progressive scan format. The maximum input clock rate is 75 MHz.

Interlaced video signals are converted into progressive scan signals using per-pixel Motion Adaptive De-interlacing. Faroudja DCDi incorporates Faroudja's patented and Emmy award-winning Edge Correction technology in which video is analyzed on a single-pixel granularity to detect presence or absence of angled lines and edges. These are then processed to produce a smooth and natural looking image without visible artifacts or "jaggies". Patented FilmMode processing is used for proper de-interlacing of 3:2 and 2:2 pull down material. Edit Correction for film content is continuously monitored for any break in sequence caused by "bad edits" and quickly compensates for the most effective reduction in artifacts.

These features are coupled with highly flexible scaling, a wide variety of aspect ratio conversions, and other special video enhancing features to produce the highest quality image.

Figure 1. System diagram



2 Feature attributes

- Inputs
  - Accepts all industry standard and non-standard video resolutions, including 480i (NTSC), 576i (PAL/SECAM), 480p, 720p, 1080i, and VGA to SXGA
  - Digital input, 8-bit YCrCb (ITU-R BT656), 8-bit YPrPb, 16-bit YCrCb (ITU-R BT601), 24-bit RGB, YCrCb, YPrPb
  - Input pixel rate up to 75 MHz maximum
- Outputs
  - Output resolutions include 480p, 576i, 576p, 720p, 1080i, 1080p, and VGA to SXGA
  - Interlaced or progressive output
  - Output is digital 24-bit RGB, YCrCb, YPrPb (4:4:4) or digital 16/20-bit YCrCb (4:2:2)
  - Output pixel rate up to 150 MHz maximum
- Front-end processing
  - Motion Adaptive Noise Reduction—Improves picture quality for off-air material
  - Cross Color Suppressor—Removes cross color artifacts in composite video signals due to poor Y/C separation in standard 2D video decoders, enabling 3D-type performance
- Formats
  - Input color manipulation matrix supports all color spaces: RGB, YPrPb, 4:4:4 YCrCb, 4:2:2 YCrCb, ITU-R BT656, ITU-R BT601
  - Output supports digital RGB, YPrPb, 4:4:4 YCrCb, 4:2:2 YCrCb
- Frame rate conversion
  - Tearless frame rate conversion, 50/60/72/75/100/120 Hz
- De-interlacing
  - Per-pixel Motion Adaptive De-interlacing (MADi)
  - Patented FilmMode processing—Used for proper de-interlacing of 3:2 and 2:2 pulldown material
  - Edit Correction—Film content is continuously monitored for any break in sequence caused by "bad edits" and quickly compensates for the most effective reduction in artifacts
  - DCDi by Faroudja—Video is analyzed on a single pixel granularity to detect presence or absence of angled lines and edges, which are then processed to produce a smooth and natural looking image without visible artifacts or "jaggies"
- Scaling
  - High-quality fully programmable two-dimensional scaler
  - Aspect ratio conversion for "anamorphic" or "panoramic" (non- linear)
  - Display 4:3 images on 16:9 displays and vice versa, including Letterbox to Fullscreen, Pillarbox, and Subtitle display modes
- Memory
  - 32-bit wide SDRAM (i.e. one 2 Mb x 32 bit, or two 1 Mb x 16 bit), up to 166 MHz operation

- Specifications
  - Two-wire control interface
  - 0.18 µm technology, 1.8 V/3.3 V operation
- TrueLife ENHANCER
  - Two-dimensional, non-linear, luma and chroma video enhancer brings out details in the picture, producing a more life-like image

3 Ordering information

Table 1. Order codes

Part number	Description
FLI2310	208-pin PQFP

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4 Revision history

Table 2. Document revision history

Date	Revision	Changes
04-Feb-2009	1	Initial release.

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