

## Single-chip analog TV processor

Data Brief

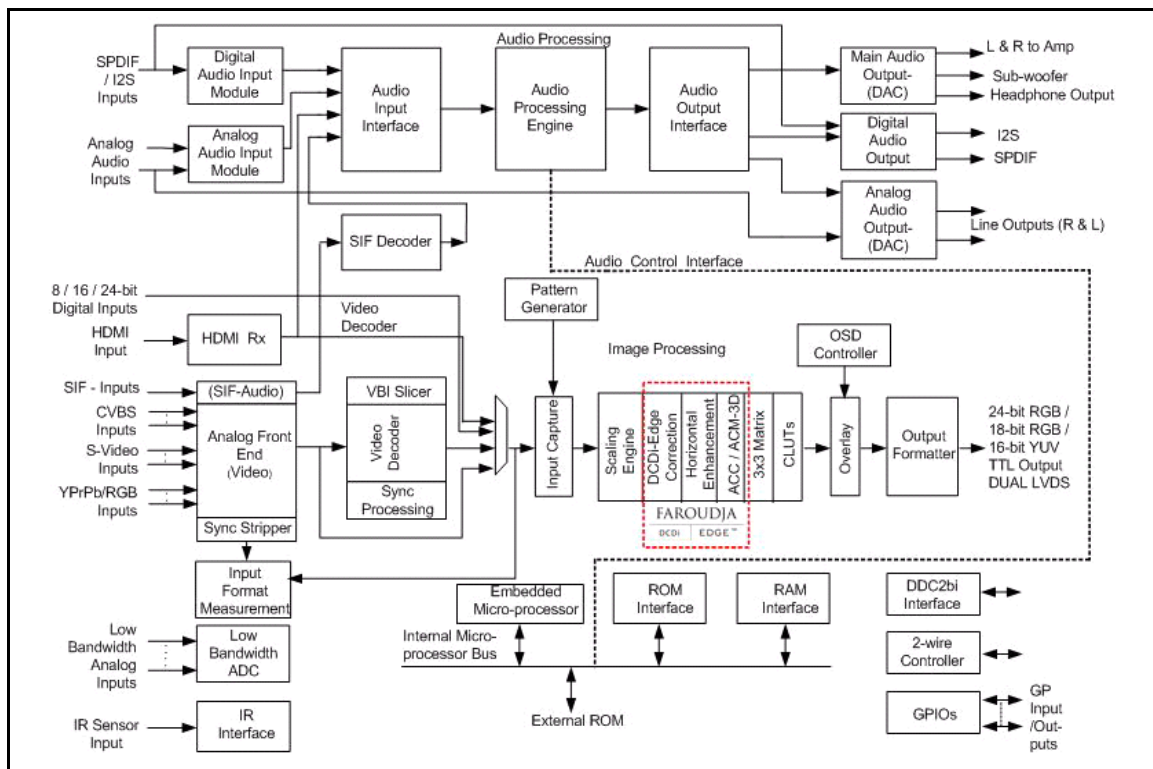
### Features

- Triple 10-bit ADC
- 2D video decoder
- HDMI Rx (in case of FLI30602H)
- Programmable digital input port (8/16 bits in FLI30602H and 24 bits in FLI30502)
- Faroudja DCDi Edge® image enhancement suite
- ACM-3D
- OSD controller
- Embedded microprocessor
- VBI slicer
- Worldwide SIF audio demodulator
- Audio processing

- Advanced audio enhancement
- Digital audio support
- I2S, SPDIF input
- I2S, SPDIF output
- Loud speaker, sub woofer, and headphone
- Analog line in, microphone in, and line out
- Tuner noise reduction

### Application

- LCD TVs
- Portable or handheld TVs



# 1 Description

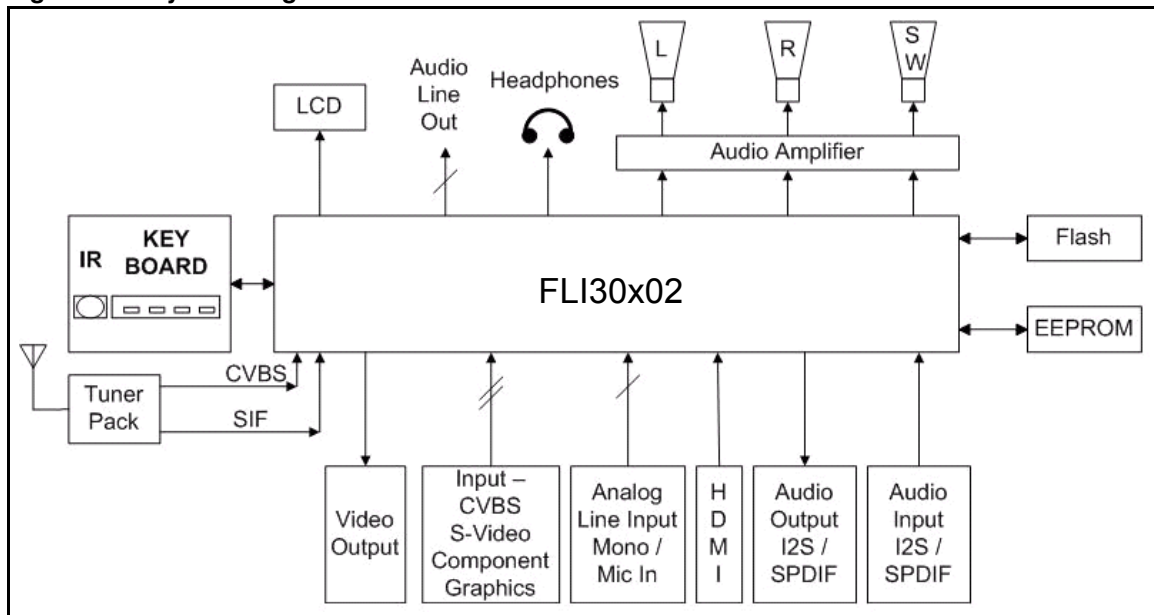
The FLI30x02 ICs are highly integrated solutions for LCD TV and Digital Audio Video applications. These solutions are capable of meeting global market requirements for: video and audio decoding and processing, Sound IF demodulation, and HDMI input support. It provides Faroudja DCDi Edge suite for advanced video and color processing.

The chip incorporates a high-speed triple 10-bit ADC that can capture and process both video (SDTV or HDTV) and graphics streams. It has a highly programmable video front-end supporting multiple inputs and connection formats such as RGB, YPrPb, S-Video, CVBS, and SCART; multi-standard video decoder (NTSC, PAL, SECAM, and all sub formats); and global VBI standards and services support via VBI Slicer. The embedded microprocessor and OSD enable full system control without external devices.

The chip supports worldwide TV audio standard demodulation (SIF) including digital audio (NICAM). It also supports analog line in, line outputs, loudspeaker, sub woofer, and headphones. The audio DSP supports high end audio processing and enhancement. In addition, I2S or SPDIF input and output ports with digital processing amplifier enable a full digital processing pipe for audio thereby supporting smaller area and power for constrained applications.

HDMI integration is beneficial; it allows both video and audio processing including 5.1 CH to 2 CH audio conversions. The DCDi Edge suite of features, which include Adaptive Contrast and Color (ACC), ensure full dynamic video range support. The ACM 3D enables color manipulation for subtle changes in color to improve the image. The chip can also support DTV front-end with its digital video and audio input ports, thereby ensuring signal integrity due to full digital processing.

**Figure 1. System diagram**



## 2 Feature attributes

- Triple 10-bit ADC
  - RGB/YPbPr support up to 160 MHz
  - SCART–RGB + fast blank support
  - Flexible analog front-end
- Digital input port
  - 8/16/24-bit reconfigurable input port
- Faroudja DCDi Edge enhancement
  - Eliminates objectionable staircasing
  - Faroudja horizontal enhancement module
  - Adaptive Contrast and Color (ACC)
  - Active Color Management—3D (ACM-3D)
- Embedded microprocessor
  - Turbo 186 core
  - Serial or parallel Flash support
  - 2-wire slave controller, UART support
  - Internal RESET controller
  - GPIOs, low bandwidth ADC—5-input
  - Infrared receiver interface
- Panel or digital output
  - 18 or 24-bit TTL output
  - Dual LVDS up to SXGA
  - Energy spectrum management for reducing EMI
- 2D video decoder
  - Worldwide NTSC/PAL/SECAM support
  - Macrovision™ and VCR trick mode support
- VBI slicer
  - V-Chip, closed captioning, XDS, CGMS, and WSS decode
  - Teletext 1.5 support
  - 10 page (internal) support
  - Extended page support with external SRAM
- Scaling engine
  - Independent H and V scaling factors
  - Anamorphic (non-linear) scaling
  - 4:2:2 YPbPr or 4:4:4 RGB scaling
- OSD controller
  - Up to 4 windows: 1, 2, or 4 bits per pixel color
  - Programmable font scalar to meet teletext requirements
- Audio support
  - Two SIF inputs

- Global audio support—BTSC, A2, NICAM, EIAJ, etc.
- Audio line in, microphone in, and line out support
- Loudspeaker, sub woofer, and headphone support
- Audio DSP
- Audio enhancement features—pseudo stereo, 5-band graphic equalizer
- I2S, SPDIF digital audio input and output support
- HDMI support (FLI30602H)
  - HDMI 1.2 compliant
  - Backward compatible with DVI 1.0
  - Supports HDCP

### 3 Ordering information

Table 1. Order codes

| Part number  | Description |
|--------------|-------------|
| FLI30502-AC  | 256 PQFP    |
| FLI30602H-AC | 256 PQFP    |

In order to meet environmental requirements, ST offers these devices in ECOPACK® packages. These packages have a lead-free second level interconnect. The category of second level interconnect is marked on the package and on the inner box label, in compliance with JEDEC Standard JESD97. The maximum ratings related to soldering conditions are also marked on the inner box label. ECOPACK is an ST trademark. ECOPACK specifications are available at [www.st.com](http://www.st.com).

## 4 Revision history

Table 2. Revision history

| Date        | Revision | Changes          |
|-------------|----------|------------------|
| 08-Sep-2008 | 1        | Initial release. |

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