



# Low Cost DVB-C STB Solution

## Chipset Features

### CPU

- High-performance ARM926EJ-FS processor
- Java hardware acceleration
- Floating-point coprocessor

### Memory Interfaces

- 16-bit DDR1 and DDR2 interfaces
- SPI flash interface
- Up to 128 MB memory capacity
- Up to 32 MB flash capacity

### QAM Demodulator

- 16-/32-/64-/128-/256-QAM demodulation
- DVB-C, ITU J83-A, and ITU J83-C standard compliance
- Integrated 12-bit intermediate-frequency ADC, supporting all direct intermediate-frequency QAM solutions
- Adaptive digital down sampling and anti-aliasing filtering, symbol rate ranging from 0.87 Mbaud to 9 Mbaud
- Adaptive digital carrier recovery, up to  $\pm 800$  kHz frequency offset
- Adaptive digital timing recovery, up to 500 ppm symbol rate deviation
- Forwarding error correction decoding
- Single- or dual-AGC
- Automatic spectrum inversion recognition and correction
- Blind scanning of symbols and demodulation mode
- 1-channel QAM loopback output

### Transport Processing

- DVB-CSA descrambler
- Serial input interface, up to 96 Mbit/s serial bit rate
- Three DEMUXs
- 32 PID filters for each DEMUX
- Up to 48 filters for each DEMUX
- 16-byte filters, supporting AND, OR, XOR, and NOT operations

### Fast Startup Engine

- Picture displaying within 1s and transparent stream displaying within 3s after startup
- Configurable duration of displaying pictures and transparent streams

### Audio Decoding

- MPEG-1 and MPEG-2 layer-I/layer-II decoding
- MP3 decoding
- 2-channel PCM audio mixing
- Embedded 24-bit audio DAC
- High-performance hardware resampling
- SPDIF digital output and direct output of AC3 streams
- 1-channel I2S output

### Video Decoding

- Full-hardware decoding of MPEG-2 MP@ML and MPEG-1
- Video bit rate of each channel ranging from 2 Mbit/s to 15 Mbit/s
- Aspect ratio of 4:3 or 16:9, free size scaling

### Graphics Processing

- Up to 64-megapixel JPEG decoding

### Graphics Processing

- 2D graphics acceleration, anti-alias, anti-flicker, and image stabilizer
- Input bitmaps in RGB or YUV format
- Format conversion of output bitmaps between RGB and YUV
- 8-, 16-, or 32-bit OSD
- Alpha and colorkey operations
- Anti-flicker filter for OSD

### Video Output

- Four-layer plane including one background layer, one video layer, and two OSD layers supporting the still layer function
- Alpha blending of the background layer, video layer, and OSD layers, 256-level transparency
- Free size video scaling
- OSD pictures in 8-, 16-, or 32-bit RGB or YCbCr format
- Norm conversion of OSD pictures between PAL and NTSC

### TV Encoder

- YPbPr, RGB, CVBS, and S-video output modes
- 4-channel video DACs, simultaneous output of 1-channel CVBS and 1-channel component (YPbPr/RGB/S-Video)
- VBI encoding, including teletext, closed caption, CGMS, WSS, and VPS

### Peripheral Interfaces

- One UART interface, one smart card interface, one IR interface, one LED interface, and three I<sup>2</sup>C interfaces

### Advanced Security

- Advanced security features
- OTP and chip ID

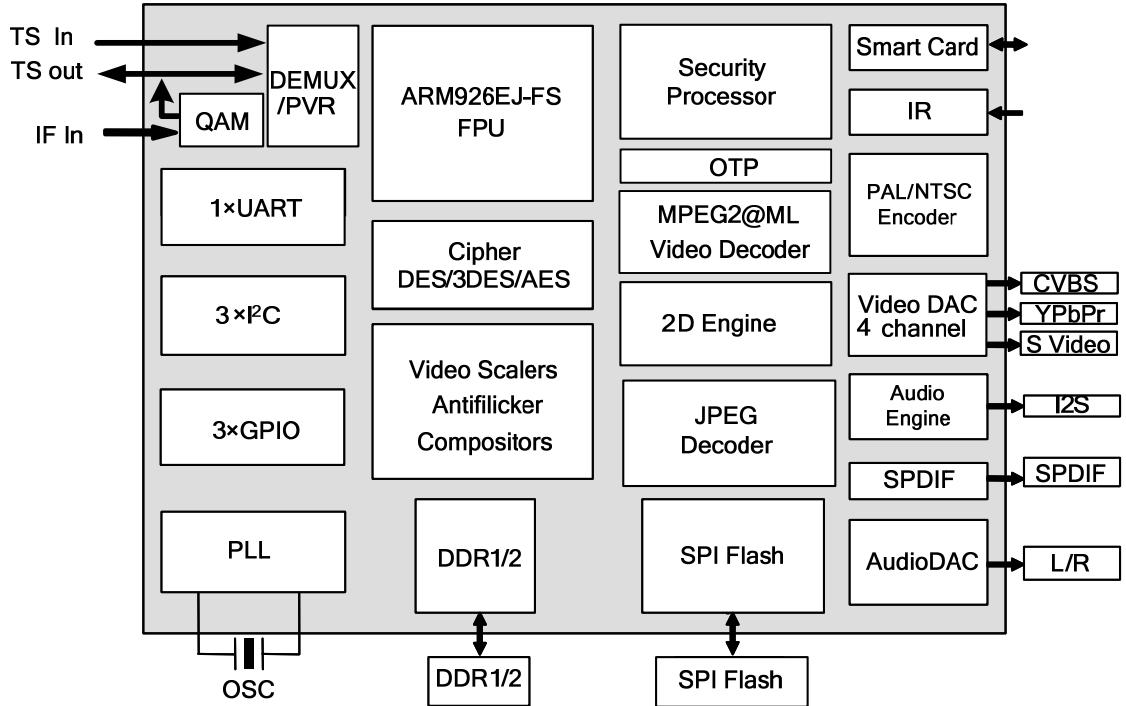
### Electrical Specifications

- Less than 1.5 W for the chip operating power consumption and 100 mW for the standby power consumption
- Idle, sleep, doze, and normal power-saving modes
- 0.11  $\mu$ m technology and 1.2 V, 1.8 V, 2.5 V, or 3.3 V power voltage
- 144-pin LQFP package

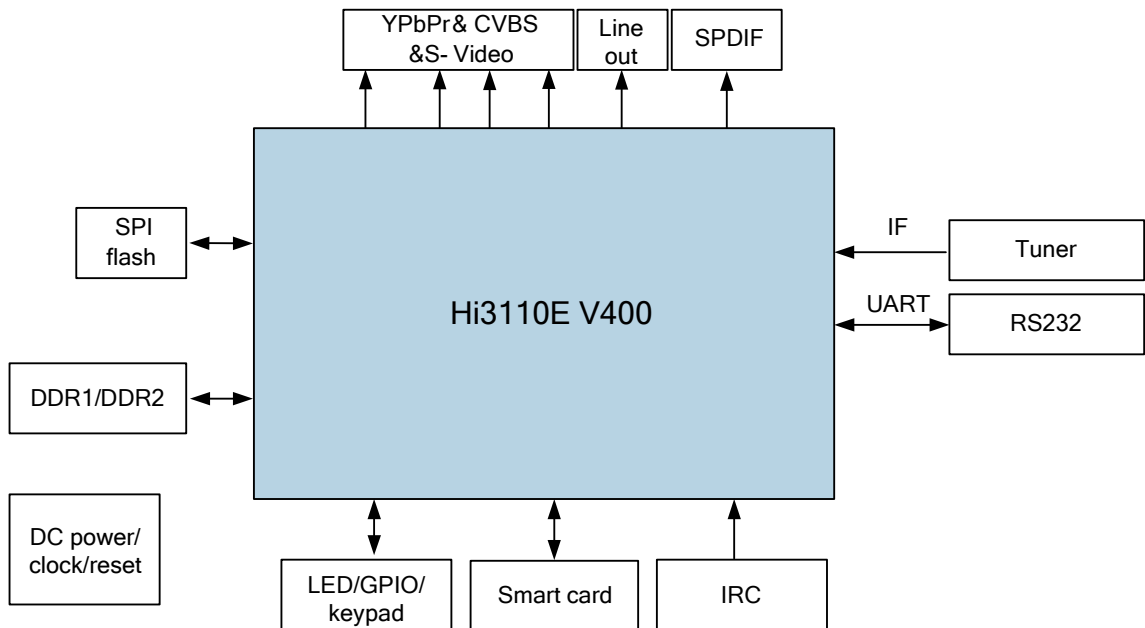


# Low Cost DVB-C STB Solution

## Functional Block Diagram



## Typical Application Block Diagram





# Low Cost DVB-C STB Solution

## Solution Features

- Advertisements
  - Displaying of static pictures within 1s or transparent stream videos within 3s after startup
  - Four-layer plane and dual-OSD menus, supporting EPG advertisement and advertisement during program channel switching
- Games
  - Console games
  - Game background music and sound effect
  - High-performance floating-point coprocessor and enhanced 2D acceleration for improving the game performance
- Home digital entertainment
  - MP3 playing
  - Browse of JPEG photos, up to 64 megapixels, special effects of shutter, gradient, and scroll bar
  - Playing of MJPEG clips recorded by the mobile phone, digital camera, or PMP
- Green STB Solution
  - Wakeup mode, and entire STB standby power consumption less than 0.8 W
  - Entire STB power consumption less than 7 W in normal running mode
  - Auto-hibernation and automatic standby when no operations in preset period
- DDR Memory Playback
  - Playback of broadcasting programs based on DDR without peripherals. The playback time depends on the available DDR space.
- Mosaic-like preview
  - Display multi-program in one window for users easy to search for favorite programs
  - Advertisements in the multi-picture window
- Advanced Security and Cardless CA Solution