



## DESCRIPTION

The ES8380 Phoenix™ processor is a single-chip DVD processor supporting DVD video, MPEG-4 ASP and DivX® Home Theater playback.

The Phoenix DVD processor is ideal for stand-alone DVD players, DVD receivers, DVD/VCR combos and DVD A/V mini-component systems. It incorporates a high-quality deinterlacer and a TV encoder that supports HD (720p/1080i) and Macrovision™ protected progressive (480p/576p) and interlaced video output. The HD output is ideal for the display of JPEG pictures, and when used with the built-in video scaler, allows up-conversion of unprotected video to HD resolution.

The Phoenix processor is built on the ESS proprietary dual CPU Programmable Multimedia Processor (PMP) core consisting of 32-bit RISC and 64-bit DSP processors that deliver the best DVD feature set. It integrates a servo controller, RF amplifier, read channel, ECC, servo DSP, and MCU. The Phoenix processor employs a unified memory architecture to ensure the lowest possible system memory cost. A USB full-speed host controller is built-in for connection to Flash memory cards.

The Phoenix processor servo controller supports all popular optical pick-up units (OPU). Its high performance error handling allows for playback of scratched and fingerprinted media.

The Phoenix processor has unmatched audio features including an integrated high quality 8-channel audio digital to analog converter (DAC) and a 2-channel analog to digital converter (ADC). Additionally, it supports the DVD-Audio, CD-DA, HDCD, MP3, WMA, AAC, and Dolby ProLogic™ II digital audio formats and Karaoke.

The ES8380 Phoenix DVD processor is available in a 208-pin Plastic Quad Flat Pack (PQFP) device package.

## FEATURES

- Built-in RF amplifier and servo controller.
- High-performance focusing, sledding, tracking and CLV/CAV spindle servo control.
- DVD-Video, DVD-R/RW, DVD+R/RW, SVCD, VCD, CD-ROM, CD-R/RW, CD-DA support.
- DivX Home Theater quality video at full screen (D1) (ES8380FCA/CB/CC/CD only).
- MPEG-4 Advanced Simple Profile video including GMC and QPEL support (ES8380FBA/BB/CA/CB/CC/CD only).
- Pixel-adaptive de-interlacer.
- Scaler for video up-conversion to 1080i/720p.
- NTSC/PAL encoder with six video DACs for composite, S-Video, and component video outputs.
- Macrovision protected, NTSC/PAL interlaced, and progressive scan (480p/576p) video output.
- HD component output for JPEG picture and video.
- CCIR656/601 YUV 4:2:2 input/output.
- 2-channel audio ADC.
- SPDIF digital audio input and output.
- 8-channel audio DAC (ES8380FAA/AC/BA/CA/CC only).
- 8-channel PWM controller for Class D power bridges (ES8380FAB/AD/BB/CB/CD only).
- USB full-speed host controller for photo and music playback.
- OSD controller supports 256 colors in 8 degrees of transparency.
- Sub-picture Unit (SPU) decoder supports karaoke lyric, subtitles and EIA-608 compliant Line 21 captioning.
- JPEG digital photo support (Kodak Picture CD™ and Fujifilm FujiColor CD™).
- Dolby Digital, Dolby ProLogic, and Dolby ProLogic II.
- DTS Surround (ES8380FAC/AD/CC/CD only).
- SRS TruSurround®.
- MPEG Multichannel, AAC, MP3 and WMA.
- Professional karaoke with full scoring scheme.
- Serial UART port.
- I2C master slave mode interface.
- 16-bit DRAM interface for up to 128-Mb capacity.
- 8-bit EPROM/Flash interface for up to 4 banks x 4 MB.
- Lead-free leads.

### ES8380 DEVICE PINOUT

The device pinout for the ES8380 is shown in Figure 1.

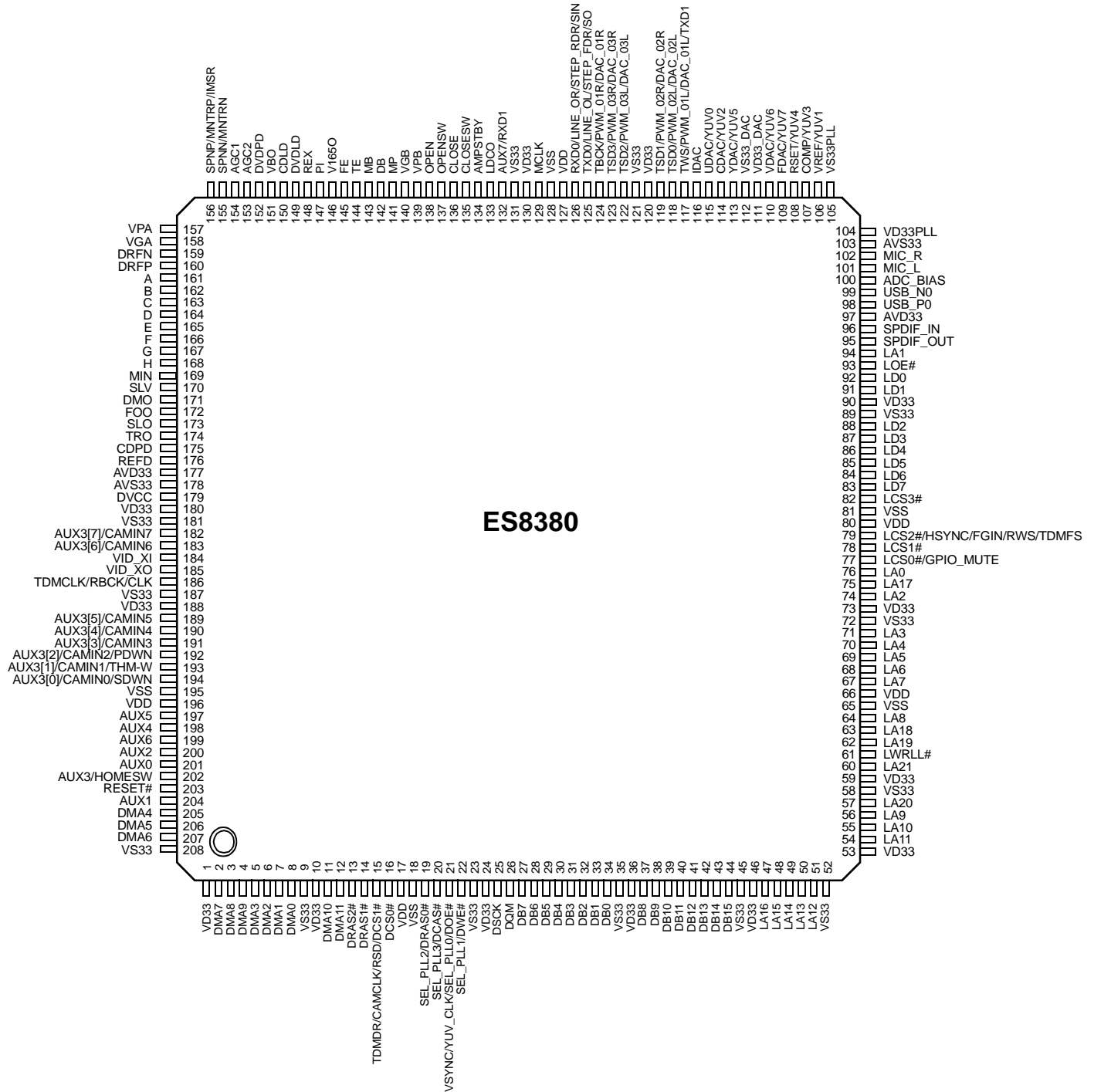


Figure 1 ES8380 Device Pinout

## SYSTEM BLOCK DIAGRAM

A sample system block diagram for the ES8380 Phoenix DVD player board design is shown in Figure 2.

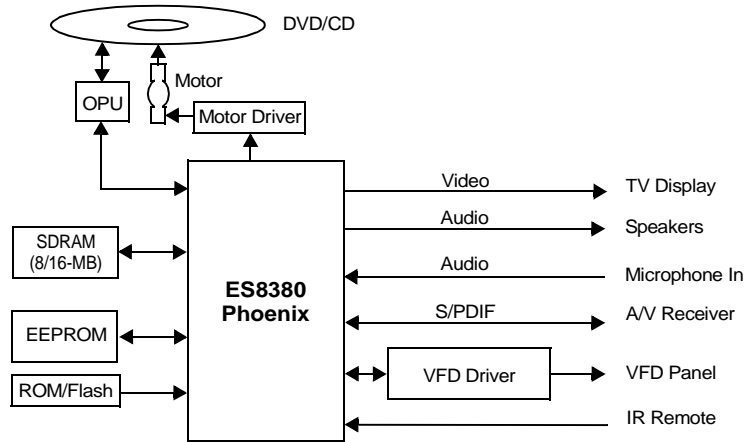


Figure 2 ES8380 Phoenix System Block Diagram

## FUNCTIONAL DESCRIPTION

Figure 3 shows the internal block diagram for the ES8380 processor.

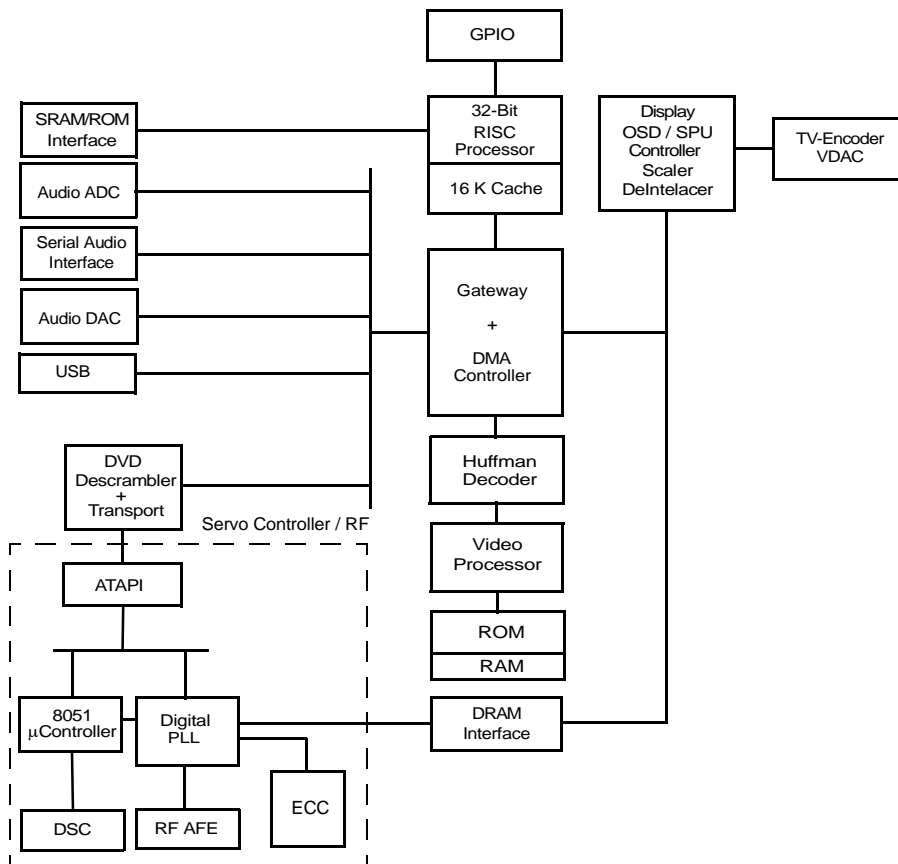


Figure 3 ES8380 Phoenix Block Diagram

## ORDERING INFORMATION

Part Number	Description	Package
ES8380FAA	Phoenix DVD SOC, Progressive scan, audio DAC, and TV encoder.	208-pin PQFP
ES8380FAB	Phoenix DVD SOC, Progressive scan, Class-D audio, and TV encoder.	208-pin PQFP
ES8380FAC	Phoenix DVD SOC, Progressive scan, DTS, audio DAC, and TV encoder.	208-pin PQFP
ES8380FAD	Phoenix DVD SOC, Progressive scan, DTS, Class-D audio, and TV encoder.	208-pin PQFP
ES8380FBA	Phoenix DVD SOC, Progressive scan, MPEG-4, audio DAC, and TV encoder.	208-pin PQFP
ES8380FBB	Phoenix DVD SOC, Progressive scan, MPEG-4, Class-D audio, and TV encoder.	208-pin PQFP
ES8380FCA	Phoenix DVD SOC, Progressive scan, MPEG-4, DivX, audio DAC, and TV encoder.	208-pin PQFP
ES8380FCB	Phoenix DVD SOC, Progressive scan, MPEG-4, DivX, Class-D audio, and TV encoder.	208-pin PQFP
ES8380FCC	Phoenix DVD SOC, Progressive scan, MPEG-4, DivX, DTS, audio DAC, and TV encoder.	208-pin PQFP
ES8380FCD	Phoenix DVD SOC, Progressive scan, MPEG-4, DivX, DTS, Class-D audio, and TV encoder.	208-pin PQFP

The first letter F in the part number identifies the package type PQFP.

## Other Phoenix DVD Processors

Part Number	Description	Package
ES8381FCC	Phoenix DVD SOC, Progressive scan, MPEG-4, DivX, DTS, audio DAC, and TV encoder.	256-pin PQFP
ES8381FCD	Phoenix DVD SOC, Progressive scan, MPEG-4, DivX, DTS, Class-D audio, and TV encoder.	256-pin PQFP

The first letter F in the part number identifies the package type PQFP.



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U.S. patents pending.

MPEG is the Moving Picture Experts Group of the ISO/IEC. References to MPEG in this document refer to the ISO/IEC JTC1 SC29 committee draft ISO 11172 dated January 9, 1992.

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