ESS Technology, Inc.

ES6430
Digital Media Processor
Product Brief

DESCRIPTION

The ES6430 Digital Media Processor (DMP™3) is a new generation of high performance audio/photo/video decoder for playback of high definition and high resolution photos, high quality music, and high bit rate videos from flash memory cards, hard disks, and USB storage devices. With its enhanced video engine, the DMP3 chip playbacks MPEG1, MPEG2, and MPEG-4 ASP video with GMC and QPEL support.

The DMP3 chip is ideal for stand-alone media players as well as for TV-embedded players. It incorporates a high-quality de interlacer and a TV encoder that supports HD photos to display 720p/1080i pictures in their native resolution. With its built-in video scaler, the DMP3 chip allows for up-conversion of home video to HD resolution.

The DMP3 chip 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 JPEG and video feature set. The DMP3 chip includes a unified memory architecture to ensure the lowest possible system memory cost. A USB full-speed host controller is built-in for viewing digital photos and music from USB mass storage devices.

The DMP3 chip offers high quality audio via its built-in stereo audio digital to analog converter (DAC) and is capable of decoding PCM wave, MP3, WMA, AAC, and Dolby Digital audio formats.

A 16-bit host interface is available for connection to CF and SM memory cards and xD picture cards, as well as to an IDE hard drive. Similarly, a serial interface is built-in to connect the DMP3 chip to SD, MMC, MS and MS Pro devices.

The ES6430 DMP3 chip is available in a 256-pin Plastic Quad Flat Pack (PQFP) device package.

FEATURES

- HD component output for 720p/1080i JPEG display.
- Scaler for video up-conversion to 720p/1080i.
- Pixel-adaptive de-interlacer.
- NTSC/PAL encoder with three video DACs for composite, S-Video and YUV/RGB video outputs.
- CCIR656/601 YUV 4:2:2 input/output.
- 12-bit/24-bit YUV digital output for HDMI transmitter or TV scaler.
- MPEG-4 Advanced Simple Profile video including GMC and QPEL support.
- MPEG-2 video playback.
- MPEG-1 and Motion-JPEG video playback.
- JPEG and Progressive JPEG photo playback.
- BMP, TIFF, PNG, and GIF picture playback.
- Wave, AAC, MP3 and WMA playback.
- ESS Music and Photo Slideshow application.
- 2 channel stereo audio DAC.
- Dolby Digital AC3 decode (ES6430FAB only).
- USB full-speed host controller for photos and MP3 playback.
- Direct interface to IDE hard drive, flash memory cards including CF, SM, SD, xD, MMC, MS, and MS Pro devices.
- OSD controller supports 256 colors in 8 degrees of transparency.
- I2C interface for master/slave communication with MCU.
- Serial UART port @ 115200 baud rate.
- 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.

ES6430 PQFP PINOUT

The device pinout for the ES6430 PQFP part is shown in Figure 1.

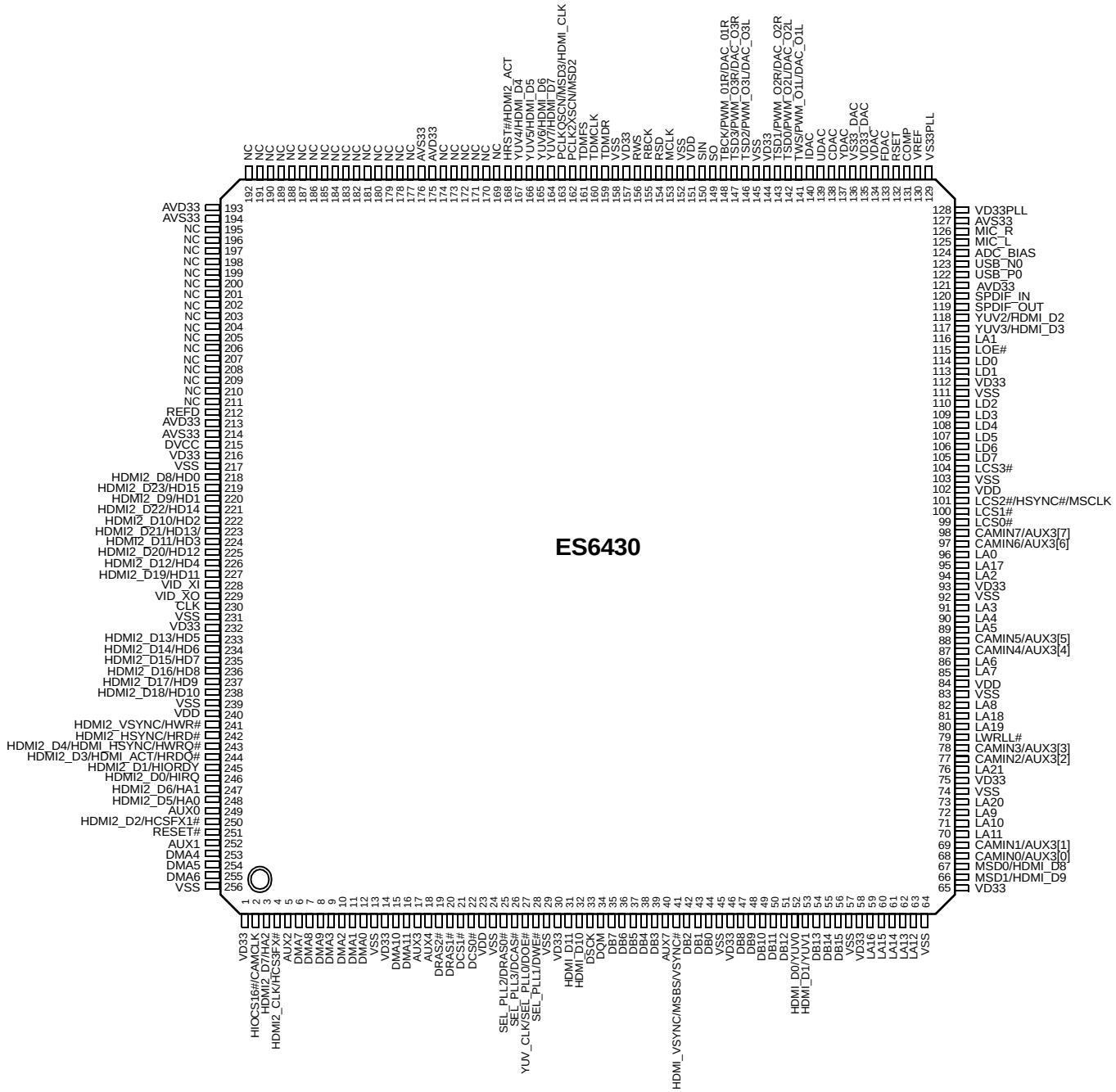


Figure 1 ES6430 PQFP Device Pinout

SYSTEM BLOCK DIAGRAM

A sample system block diagram for the ES6430 DMP3 player board design is shown in Figure 2.

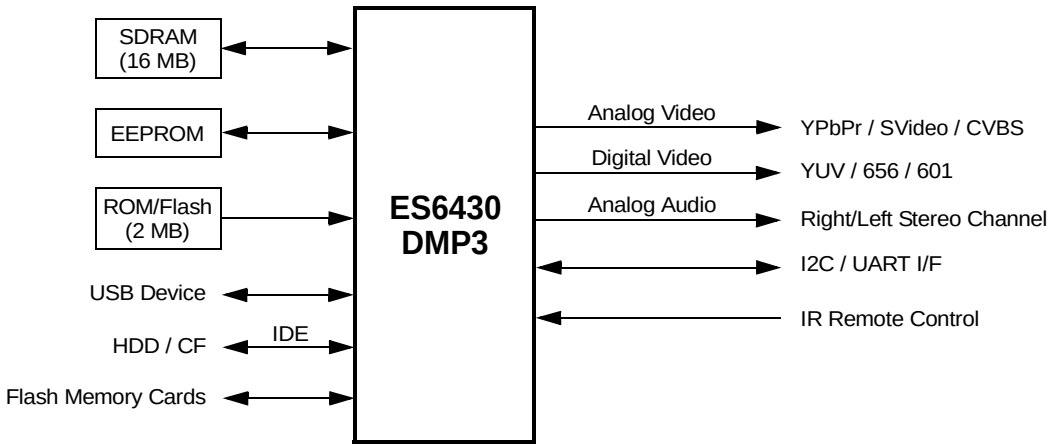


Figure 2 ES6430 DMP3 System Block Diagram

FUNCTIONAL DESCRIPTION

Figure 3 shows the internal block diagram for the ES6430 processor.

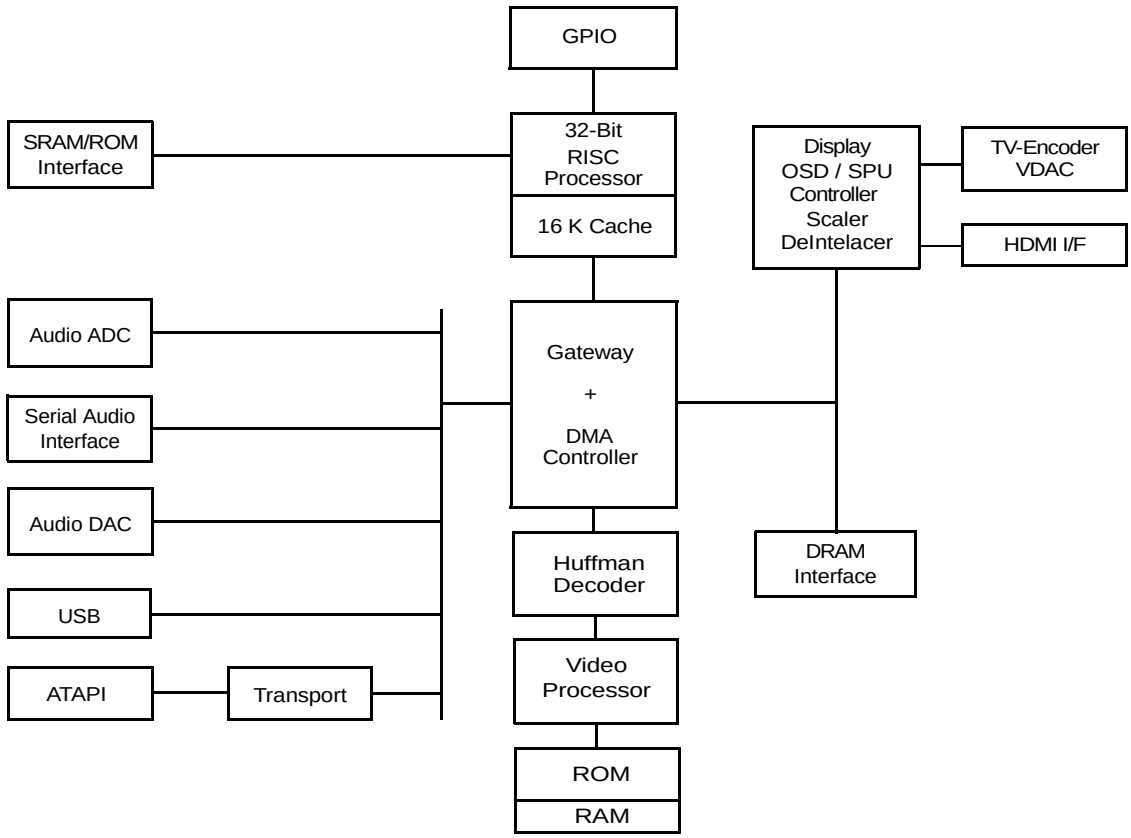


Figure 3 ES6430 DMP3 Block Diagram

QFP MECHANICAL DIMENSIONS

The mechanical dimensions for the ES6430 QFP part are shown in Figure 4.

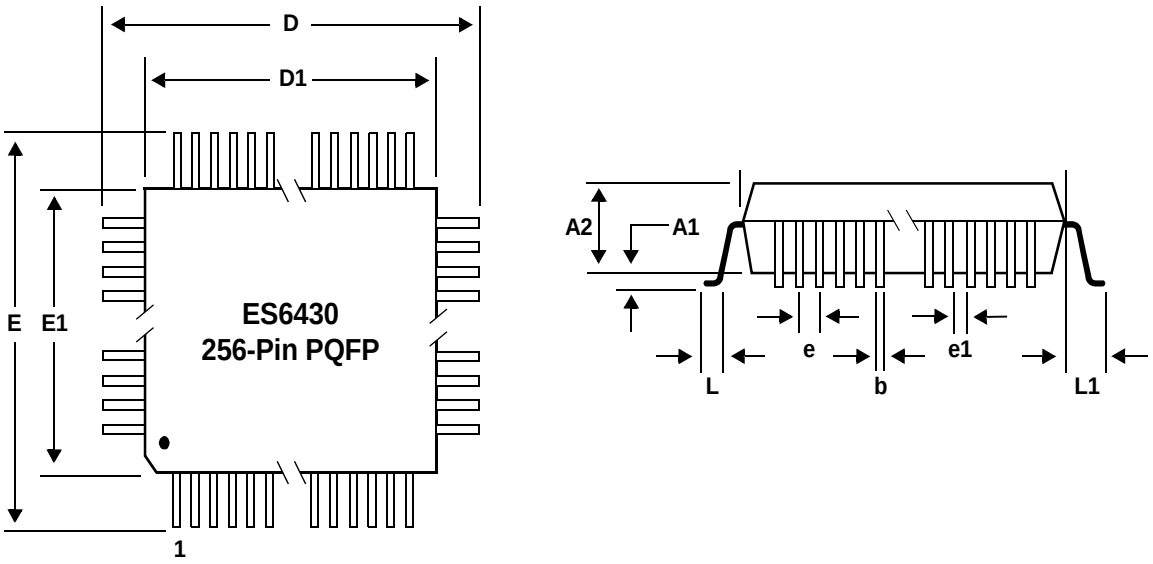


Figure 4 Plastic Quad Flat Package (PQFP) Mechanical Dimensions

Table 1 ES6430 256-Pin PQFP Package Dimensions

Symbol	Descriptions	Millimeters		
		Minimum	Nominal	Maximum
D	Lead to lead, X-axis	—	30.60	—
D1	Package's outside, X-axis	—	28.00	—
E	Lead to lead, Y-axis	—	30.60	—
E1	Package's outside, Y-axis	—	28.00	—
A1	Board standoff	0.25	0.33	0.42
A2	Package thickness	3.20	3.32	3.60
b	Lead width	0.13	0.16	0.23
e	Lead pitch	—	0.40	—
e1	Lead gap	0.17	0.24	0.27
L	Foot length	0.45	0.60	0.75
L1	Lead length	—	1.30	—
—	Foot angle	0°	—	7°
—	Coplanarity	—	—	0.102
—	Number of leads in X-axis	—	64	—
—	Number of leads in Y-axis	—	64	—
—	Total number of leads	—	256	—
—	Package type	—	PQFP	—

For lead-free devices, the solder paste and PCB finish/plating must be 100% lead-free in order to ensure proper solderability.

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ORDERING INFORMATION

Part Number	Description	Package
ES6430FAA	DMP3 Processor.	256-pin PQFP
ES6430FAB	DMP3 Processor with Dolby decode.	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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