

# ***ES7010 and ES7011 MPEG2 AV Encoder Product Brief***

The ES7010 and ES7011 are MPEG2 audio video encoders. They consist of a video encode/transcode unit, audio DSP engine, a 32-bit RISC CPU, a video input/output unit and a system control unit. The devices uses either 8MB or 16MB of SDRAM depending on the functions. This device is the optimal choice for consumer digital video recording and playback needs.

## Features

---

### Video encoder

Stream standard:	MPEG2 video MP@ML, SP@ML standard, MPEG1 standard
Picture size (resolution):	720x480/576 (Full D1) 704x480/576 (Cropped D1) 544x480/576 (3/4 D1) 480x480/576 (2/3 D1) 352x480/576 (1/2 D1) 352x240/288 (SIF)
Bit rate encoding:	Single-pass, variable bit rate (VBR), constant bit rate (CBR) encoding
Transrating:	Bit rate conversion, VBR to and from CBR
Transcoding:	MPEG2 format conversion (MPEG2-TS to and from MPEG2-PS)

---

### Video input/output

Format:	8-bit Y/Cb/Cr 4:2:2 (ITU-R BT.656)
Pre analysis:	Film detect, scene changing detect, and motion estimation assist

---

### Audio encoding (ES7010)

Bit length:	16 bits, 20 bits, 24 bits
Sampling rate:	32 kHz, 44.1 kHz, 48 kHz
MPEG standard:	Audio layer 2 standard based
Dolby encoder (ES7011 only):	Dolby Digital Consumer Encoder (DDCE). A license from Dolby is required.
Streams:	Elementary stream and PCM audio input/output

---

### MPEG system processing

Multiplex:	MPEG2-PS, MPEG2-TS, DVD-VIDEO, and DVD-VR
De-multiplex:	MPEG2-PS, MPEG2-TS

---

### Mechanical and electrical

Package:	208-pin fine pitch plastic quad flat package (PQFP)
Power supply:	1200 mW (typical)
Power supply voltage:	3.3±0.165V, 2.5±0.2V (internal circuit power)

## Home Applications

- **Digital video recorder (DVR) that can delay, pause, record and search live video broadcast. A hard disk drive system or an optical media disk system can be supported.**
- **DVR Integrated with:**
  - DVD player
  - Digital TV
  - Cable, satellite or DSL set top box.
- **Recordable DVD (or VCD) player**
- **Camcorder:**

- Video capture and editing
- Creating video CDs and DVDs.
- Media servers

### Commercial Applications

- Media servers
- Any video aggregation, distribution, transmission or networking application:
  - Video-on-demand server
  - Video conferencing
  - Unicast or multicast streaming of video for communication or training purposes.
- Security and surveillance cameras.

### Block Diagram

Figure 1 is a block diagram of the encoder.

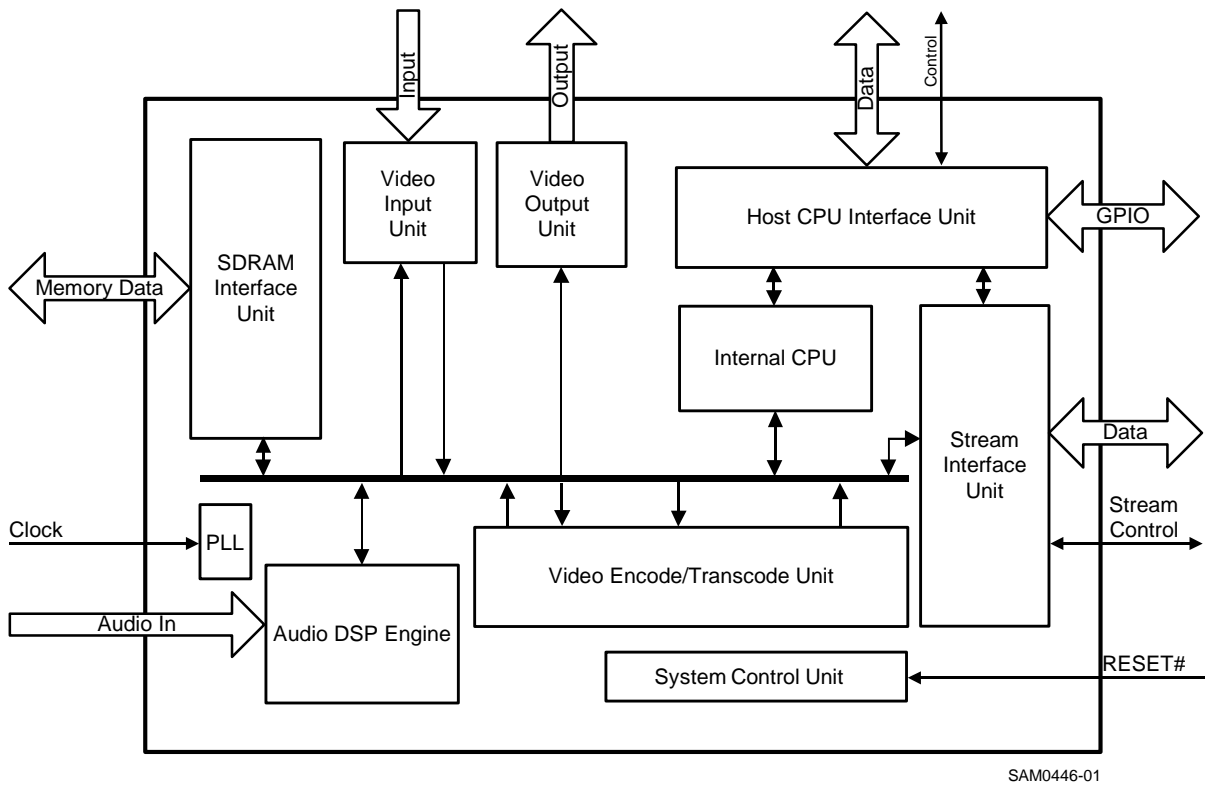


Figure 1 Block Diagram

## Peripheral Connections

Figure 1 illustrates a typical application.

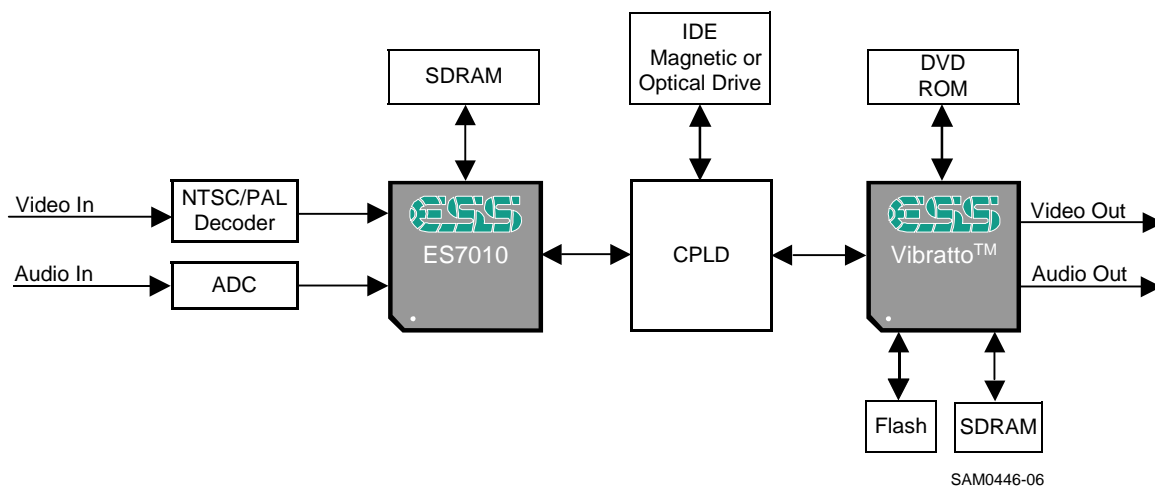


Figure 2 Peripheral Connections

## Part Number Differences Explained

The ES7010 and ES7011 are alike except that the ES7011 supports Dolby Digital Consumer Electronics (DDCE) audio encoding. Accordingly, Dolby Digital audio enabling software is only provided with the ES7011 product. To simplify writing and reading this document, the different part numbers are not specified in text, illustrations, and tables. Everywhere the part number ES7010 appears, the information is valid for the ES7011 as well unless specifically noted otherwise. To use the ES7011, a license from Dolby Laboratories Licensing Corporation is required.

## License Requirements

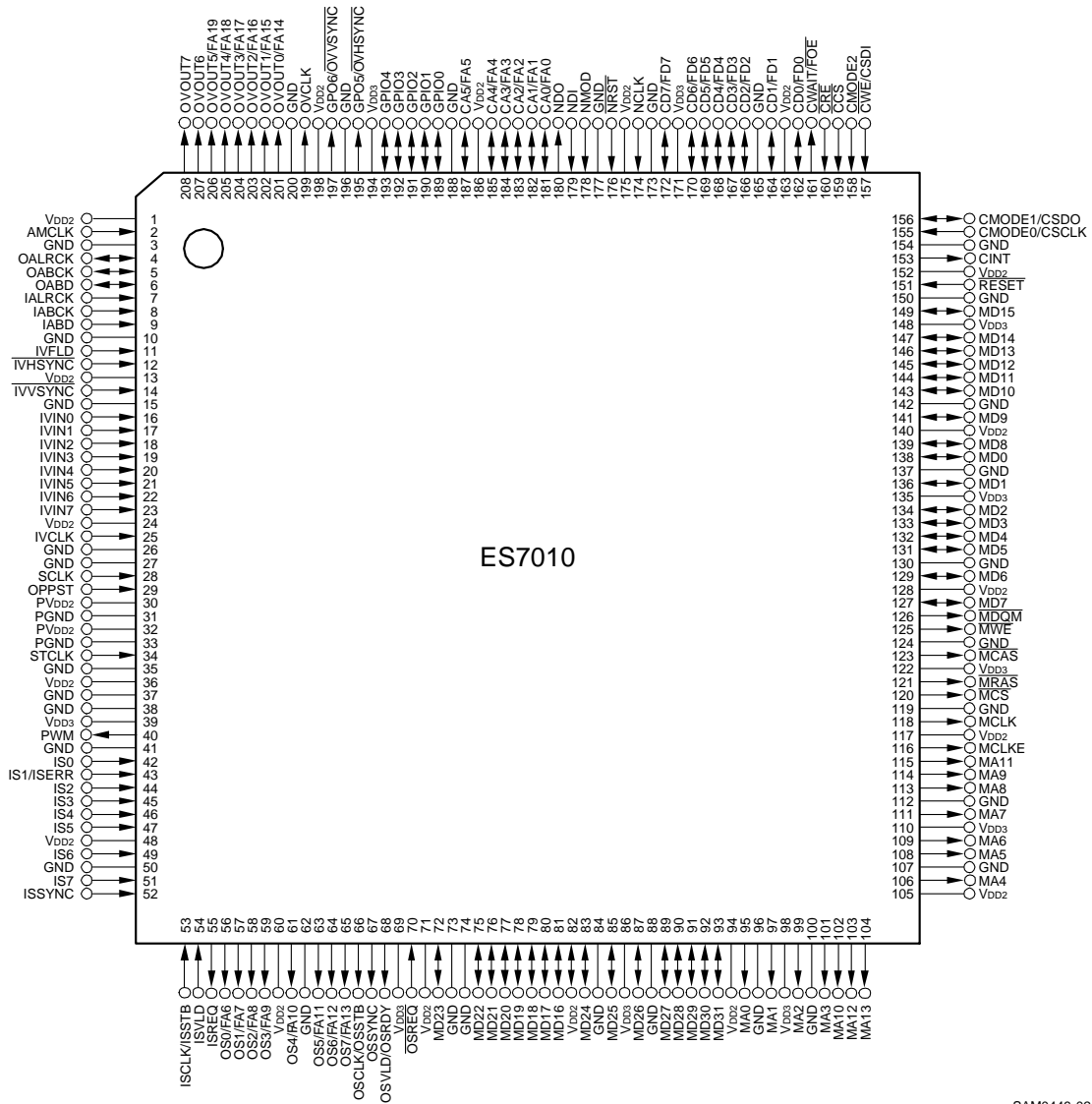
Dolby is a trademark of the Dolby Laboratories. Supplying this implementation of Dolby Technology does not convey a license or imply a right under any patent, or any other Industrial or Intellectual Property Right of Dolby Laboratories, to use this implementation in any end-user or ready-to-use final product. Companies planning to use this implementation in products must obtain a license from Dolby Laboratories Licensing Corporation before designing such products. Additional per-chip royalties may be required and are paid by the purchaser to Dolby Laboratories, Inc. Details of the OEM Dolby Digital license may be obtained by writing to:

Dolby Laboratories Inc.  
 Dolby Laboratories Licensing Corporation  
 Attn: Intellectual Property Manager  
 100 Potrero Avenue  
 San Francisco, CA 94103-4813



## Pinout Diagram

Figure 3 is a diagram of the encoder pinouts.



SAM0446-02

Figure 3 Pinout Diagram

## Ordering Information

Part Number	Description	Package
ES7010F	MPEG2 AV Encoder	208-pin PQFP (Fine pitch)
ES7011F	MPEG2 AV Encoder with DDCE	208-pin PQFP (Fine pitch)



**ESS Technology, Inc.**  
**48401 Fremont Blvd.**  
**Fremont, CA 94538**  
**Tel: 510-492-1088**  
**Fax: 510-492-1098**

No part of this publication may be reproduced, stored in a retrieval system, transmitted, or translated in any form or by any means, electronic, mechanical, manual, optical, or otherwise, without the prior written permission of ESS Technology, Inc.

ESS Technology, Inc. makes no representations or warranties regarding the content of this document.

All specifications are subject to change without prior notice.

ESS Technology, Inc. assumes no responsibility for any errors contained herein.

(P) U.S. patents pending.