



TV peripheral encompasses superset processor

In September 2002, Delkin (www.delkin.com) introduced its eFilm Picturevision, which enables the playback of audio, still-image, and video files on a variety of memory-card formats. The price was then \$159; by April 2004, the price was down to \$9.99 after a \$50 rebate. The device includes many hardware building blocks that enable it to work its decoding and displaying magic.

Delkin's product natively handles CompactFlash I and II, including MicroDrive; Memory Stick, but not higher capacity Memory Stick Pro; Multimedia Card; Secure Digital, but not higher capacity SDHC (secure-digital high-capacity); and now-defunct SmartMedia module formats. Front-panel LEDs indicate valid system power and in-progress memory-card accesses. On the other end of the front panel, you'll find an infrared receiver that partners with the supplied remote control.

The system design contains many elements of mystery. For example, the PCB has unpopulated sites for three additional SOP-enclosed ICs, along with unused locations for numerous capacitors, inductors, and resistors.

The heart of Picturevision is ESS Technology's ES4318 DVD processor. This 208-lead, PQFP-enclosed IC tackles JPEG images, MP3 audio tracks, and MPEG-1 and MPEG-2 video clips on behalf of Delkin's device. But, the ESS IC can support many other formats. Picturevision is a case study of the appeal of leveraging high-volume and, therefore, low-cost semiconductors.

Picturevision's memory foundation comprises a curious mix of three technologies: Macronix's 8-Mbit 29F080 flash memory, AMIC Technology's 512-kbit, OTP A276308 EPROM, and two 16-bit AMIC A43L0616 SDRAMs. Proximity and trace routing suggest that the 29F080 houses code that the ES4318 executes, but what of the seemingly redundant nonvolatile A276308? Does it store overflow code for the ES4318 that, by virtue of its EPROM location, you can't update within the system? Does it hold nonupgradable system data? Or is it the nonvolatile-memory partner to another system IC? And where is the EEPROM or battery-backed SRAM? Maybe this design needs no nonvolatile, byte-rewritable storage.

Cirrus Logic's CS4955 video encoder combines with an NTSC/PAL switch on the system back panel to convert the ES4318's digital-video output into a composite analog-video connection. Similarly, Texas Instruments' PCM1723 DAC with integrated PLL translates the ES4318's I²S audio interface into two-channel analog audio.

Consider, too, the mysterious QFP chip with the word "DRIVE" stamped in large type on the first line of the package mark, "free" below it, and "PF08-2-0-0" on line three. No amount of Google searching uncovered the chip's identity, and those at Delkin who might know the answer have long ago departed. My guess is that it's an interface chip that translates between Picturevision's various memory-card slots and the ATAPI (advanced-technology-attachment-packet-interface) port that the ESS ES4318 expects.

