

AUDIO/VIDEO**3D cards go mainstream.**

Although 3D is close to being a standard feature, the technology is still in a high state of flux. Capability, price, terminology, and compatibility vary widely and with little correlation. J.V. Bolkan, *PC Graphics and Video*, 8/98, p. 34, 5 pp.

BUSES**Interconnect is key in hierarchical approach to SOCs.**

With the silicon potential for multimillion-gate SOCs, what's needed is a block-level design approach that promotes the reuse of legacy IP blocks as well as the use of newly licensed and/or internally developed IP blocks. Barbara Tuck, *Computer Design*, 7/98, p. 22, 2 pp.

LVDS invades bus board-level applications. Low-voltage differential signaling (LVDS) was once confined to high-speed data transmission over relatively long cabling. Now digital data rates are so high that LVDS is being used at the board and bus levels. Charles Small, *Computer Design*, 7/98, p. 34, 1 pp.

DSP

DSP processors hit the mainstream. Increasingly affordable digital signal processing extends the functionality of embedded systems and so will play a larger role in new consumer products. This tutorial explains what DSP processors are and what they do. It also offers a guide to evaluating them for use in a product or application. Jennifer Eyre and Jeff Bier, Berkeley Design Technology; *Computer*, 8/98, p. 51, 9 pp.

IC DESIGN**Survey report: CPU cores.**

CPU cores covering a full range of performance levels are available under a variety of marketing programs. Most cores are relatively small, often occupying less than 10% of a chip's area. These considerations appear to make CPU cores easy to find, as well as to fit into system-on-a-chip designs. Richard Quinnell, *Silicon Strategies*, 8/98, p. 32, 6 pp.

FPGA synthesis tools peek at target architecture to improve logic fit. When creating programmable logic, engineers either draw the design on a schematic or define it with a hardware-description language (HDL). With the large size of modern FPGAs, schematic-based methods just take too much time, so today the most common one involves a synthesis program. Brian Bishop, *Personal Engineer*, 8/98, p. 44, 5 pp.

MEMORY

Virtual memory: issues of implementation. The authors introduce basic virtual-memory technologies and then compare memory-management designs in three commercial microarchitectures. They show the diversity of virtual-memory support, and by implication, how this diversity can complicate and compromise system operations. Bruce Jacob, University of Maryland, and Trevor Mudge, University of Michigan; *Computer*, 6/98, p. 33, 11 pp.

Multiprocessors should support simple memory-consistency models. Multiprocessors should support sequential consistency because—with speculative execution—relaxed models do not provide sufficient additional performance to justify exposing their complexity to the authors of low-level software. Mark Hill, University of Wisconsin, Madison; *Computer*, 6/98, p. 28, 7 pp.

MISCELLANEOUS**Home appliances get smart.**

Novel sensors and control algorithms embedded in today's appliances make them smart enough to estimate the size and dirtiness of a load of clothes tossed in a washer or determine whether water in a pot on the stove is boiling. And as semiconductor costs come down, appliances will get even smarter. Vivek Badami and Nicolas Chbat, General Electric; *IEEE Spectrum*, 8/98, p. 36, 8 pp.

ADSL chip sets trim down the G.lite. Slow to reach its deployment goal, ADSL tries a consumer-friendly G.lite diet. With computer and telephone companies pushing the G.lite standard, ADSL chip vendors are upgrading their products for consumer-grade modems. Stephen Kempainen, *EDN*, 7/2/98, p. 81, 11 pp.

Next-gen lithography crapsheet. The semiconductor industry has not been able to settle on a technology to replace optical lithography, and the clock is ticking. Jeff Dorsch, *Electronic Business*, 7/98, p. 45, 3 pp.

PROCESSORS

Trends in embedded micro-processor design. Makers of embedded 32-bit processors have narrowed the gap between embedded and desktop systems as new applications have fostered new classes of processors. How will this trend influence future embedded-processor design? Manfred Schlett, Hitachi; *Computer*, 8/98, p. 44, 6 pp.

SYSTEM DESIGN**Probing the heart of PC motherboards.**

Intel and most of the PC industry recently announced the progression from a 66- to a 100-MHz main-memory bus—an increase in throughput from 528 to 800 Mbytes/s—to fulfill the needs of the skyrocketing CPU frequencies. Traditional benchmarks demonstrate the benefits systems derive from using a faster system bus, but what happens inside the computer system? Markus Levy, *EDN*, 7/2/98, p. 48, 11 pp.

Board computers react quickly to advances in CPU technology. On the single-board computers (SBCs) that power ruggedized systems, Intel's most powerful chip that's readily available—the Pentium II—has become commonplace. When evaluating boards, it's mandatory to become familiar with what's happening in CPU technology. Paul Schreier, *Personal Engineering*, 8/98, p. 23, 8 pp.