

AUDIO/VIDEO

Digital audio technology must support a maze of standards. Multiple standards now define the sampling, conversion, compression, formatting, encryption, and transmission of digital audio. Fortunately, chip vendors have found ways to increase the performance and versatility of audio processors without making the chip count or power consumption prohibitive in portable applications. Michael Elphick, *Portable Design*, 9/99, p. 28, 6 pp.

DEVELOPMENT TOOLS

Behavioral modeling in VHDL simulation. Using an effective testbench is an important part of programmable-logic simulation. Knowing which VHDL features support high-level modeling helps reduce your testbench-development time. Gary Peyrot, Lattice Semiconductor; *EDN*, 10/99, p. 49, 10 pp.

New methodologies drive first-pass SOC success. Systems on a chip require not merely new tools and strategies, but new ways of thinking about chip design. The necessary changes are going to require much greater cooperation across the entire industry. Lauren Brust, Lucent; *ISD*, 10/99, p. 17, 6 pp.

IC DESIGN

1999 survey of IP usage. Industry insiders believe they'll be using more soft IP cores in the near future but still anticipate multichip systems rather than systems on a chip. *Silicon Strategies*, 10/99, p. 24, 9 pp.

Chip-core protection: everybody's business. Anyone involved with core-based chip design—core vendors, chip designers, and chip fabricators—should be concerned about protecting chip cores from unauthorized use. Jim Lipman, *EDN*, 10/99, p. 99, 5 pp.

MEMORY

Mosys delivers technology with mass appeal. With memory already occupying about half the area in major SOC designs, one company's innovative high-density memory technology is attracting the attention—and dollars—of leading names in the OEM and consumer marketplaces. Mike Johnston, *Silicon Strategies*, 10/99, p. 28, 3 pp.

Double-data-rate SDRAMs supplant Rambus in Y2K servers. It appears that SDRAM will be the memory of choice for server applications throughout most of the year 2000. Until both production and testing costs are addressed, Rambus remains on the horizon. Mathew Dirjish, *Electronic Products*, 10/99, p. 24, 2 pp.

PROCESSORS

Microcontrollers wrap many features in small packages. Although marketing efforts focus on high-end 32- and 64-bit microprocessors, DSPs, and very-long-instruction-word processors, lowly 8-bit processors continue to dominate products shipped. Markus Levy, *EDN*, 10/99, p. 121, 6 pp.

Multithreading appears in hardware architectures. In the past, silicon area budgets did not allow register files large enough to accommodate multiple threads awaiting execution, although software multithreading has been common in operating systems for years. Now, rapid CMOS feature shrinkage has prompted architects at three companies to rethink their priorities. Rodney Myrvaagnes, *Electronic Products*, 10/99, p. 23, 2 pp.

PROGRAMMABLE LOGIC

Survey: high-density programmable logic devices. Until last year, the largest programmable devices fell short of achieving the densities and performance needed to seriously challenge ASICs for system-on-a-chip (SOC) integration. Now, device improvements, process advances, and changes in ASIC development costs have altered the situation. Richard Quinnell, *Silicon Strategies*, 10/99, p. 32, 5 pp.

SYSTEM DESIGN

MEMS: the systems function revolution. Microelectromechanical systems offer unprecedented flexibility, but many system implementers do not grasp their advantages and abilities, or how their fabrication differs from semiconductor manufacturing processes. Karen Markus, Cronos Integrated Microsystems, Kaigham Gabriel, Carnegie-Mellon University; *Computer*, 10/99, p. 25, 7 pp.

Pandora's set-top box. Chip makers pursue a market that seems short on profit and long on turmoil. Tam Harbert, *Electronic Business*, 10/99, p. 66, 5 pp.

The via squeeze. Under 0.1 mm in diameter and dwindling still, microvias occupy less space than ever on jam-packed printed-circuit boards. Charles Lassen and Mark Christensen, Prismark Partners; *IEEE Spectrum*, 10/99, p. 36, 6 pp.

Will Bluetooth kill IrDA? Many Bluetooth promoters have predicted that this latest technology will take over as the dominant short-range link. That may or may not be true, but it's important to understand the reasons behind it. Lawrence Faulkner, IrDA; *Portable Design*, 10/99, p. 64, 2 pp.

Bluetooth technology starts to make in-roads. Intended as a low-cost short-range radio link, Bluetooth is making the transformation from a technology to a product enabler. For a host of reasons, it has the upper hand on some of the existing wireless transmission techniques. Richard Nass, *Portable Design*, 10/99, p. 30, 3 pp.

Designing Bluetooth connectivity into portables. Bluetooth's networking capabilities, low cost, and worldwide acceptance make it attractive for our portables' short-range wireless data connections. Here are some things to consider before you get started. Skip Powers, Silicon Wave; *Portable Design*, 9/99, p. 61, 2 pp.