

BUSES

Scaling PCI systems to run dozens of processors. In combination with switch-fabric technology, PCI can serve as a standard base for processor arrays to easily deploy MP processing power. Richard Jaenicke, Mercury Computer; *RTC*, 5/99, p. 49, 3 pp.

Extending PCI performance beyond the desktop. PCI buses are not only prevalent in desktop systems, they are also being reconfigured for industrial applications, embedded systems, laptops, other mobile devices, and graphics applications. Shlomo Weiss, Tel Aviv University, and Ehud Finkelstein, Seagull Semiconductor; *Computer*, 6/99, p. 80, 8 pp.

DEVELOPMENT TOOLS

Testing embedded-core-based system chips. The attributes that make the design of system chips built with IP cores attractive also make testing and debugging these system chips a complex challenge. Yervant Zorian, LogicVision et al.; *Computer*, 6/99, p. 52, 9 pp.

Tool suite bridges hardware and software digital-design issues. New logic analyzers, a digital-storage oscilloscope, a data generator, and probes simplify the verification, debugging, and characterization of fast digital systems. Joseph Desposito, *Electronic Design*, 5/31/99, p. 33, 3 pp.

IC DESIGN

Testing big chips becomes an internal affair. With lots of hidden nodes, big chips need on-board test structures—and this software helps design them. Stan Runyon, *IEEE Spectrum*, 4/99, p. 49, 7 pp.

Focus report: HDL add-in tools. Soaring circuit complexity is the attractive force that keeps HDL add-in tools in orbit around core software for simulation, synthesis, and placement and routing. Gil Bassak, *Integrated System Design*, 6/99, p. 54, 9 pp.

Using term rewriting systems to design and verify processors. The operational semantics of a simple RISC instruction set serve as an illustration in this novel use of term rewriting systems to describe microarchitectures. Arvind and Xiaowei Shen, MIT; *IEEE Micro*, 5/99, p. 36, 11 pp.

New gate oxide material promises commercially viable GaAs MOSFET. Researchers at Lucent Technologies have come up with gate-oxide material to allow the fabrication of a gallium-arsenide-based MOSFET. Ashok Bindra, *Electronic Design*, 5/17/99, p. 31, 1 pg.

Static timing analysis increases ASIC performance. Given their ability to handle asynchronous clocks and incremental analysis, these new tools might just save you time and boost your design's performance. Dean Bronnenberg, Radix Technologies; *Integrated System Design*, 6/99, p. 44, 6 pp.

Understanding encroaching parasitics can help to ensure signal quality. Careful interconnect analysis is becoming more important in the designer's quest to satisfy timing and signal quality requirements of deep-submicron processes. Tetsu Maniwa, *Integrated System Design*, 6/99, p. 30, 4 pp.

MEMORY

Cache-only memory architectures. COMA reduces the impact of frequent long-latency memory accesses by automatically replicating and migrating data across memory modules. Fredrik Dahlgren, Ericsson, and Josep Torrellas, Univ. of Illinois; *Computer*, 6/99, p. 72, 8 pp.

Competing DRAM architectures push performance and density limits. Two advanced DRAM architectures—the synchronous DRAM and the Direct RDRAM—battle for system sockets. Dave Bursky, *Electronic Design*, 5/31/99, p. 61, 5 pp.

PROGRAMMABLE LOGIC

High-density PLD family combines best of FPGAs and CPLDs. A merger of the advantages of FPGA architectures and the predictable high performance of CPLDs creates new opportunities for designers. Dave Bursky, *Electronic Design*, 5/17/99, p. 38, 4 pp.

SYSTEM DESIGN

Wireless standards vie for your app. Which standard is best for your embedded application? When selecting a standard, consider RF design, power usage, range, and interoperability. Nicholas Cravotta, *EDN*, 5/13/99, p. 60, 8 pp.

Advanced tools ease multi-processing programming. Tools and methods are emerging to take up the complexity load, turning high-performance computing (HPC) system development into a viable task. Barry Jackson, Sky Computers; *RTC*, 5/99, p. 55, 3 pp.

Extended temperature range computing. Operational performance depends on attention to details: IC screening, PC-board design, and the processor's temperature characteristics. Sam Davis, *RTC*, 5/99, p. 35, 3 pp.

How VSIA answers the SOC dilemma. System-on-a-chip promises to revolutionize the design of electronic products. To unleash the potential of SOCs, the Virtual Socket Interface Alliance is laying the groundwork for open interoperability standards. Mark Birnbaum and Howard Sachs, Fujitsu; *Computer*, 6/99, p. 42, 9 pp.

Bluetooth and beyond: wireless networks get personal. Using HomeRF, Bluetooth, and other low-cost RF technologies, designers can create smarter homes, offices, and briefcases. Lee Goldberg, *Electronic Design*, 5/17/99, p. 68, 6 pp.

Embedded Java: an uncertain future. Object-oriented architecture and processor independence have made Java a phenomenal success on the desktop, but the future is not so clear for embedded systems. Warren Webb, *EDN*, 5/13/99, p. 89, 5 pp.

SOCs drive new product development. The economy and compactness of system chips are opening new avenues for product innovation. Here are a few new products that illustrate the advantages SOCs offer electronic products. Gary Silcott, Motorola; *Computer*, 6/99, p. 61, 2 pp.