

10-MIPS SCALABLE RISC PROCESSOR (SPARC) USED IN SUN-4 WORKSTATION
NOW AVAILABLE FROM FUJITSU IN PROTOTYPE QUANTITIES

NEW YORK, July 8, 1987 -- The high-performance 32-bit Reduced

Instruction Set Computer (RISC) microprocessor introduced in the Sun Microsystems Sun-4 workstation is now available from Fujitsu Microelectronics, Inc., for sampling and prototype development. Fujitsu's Scalable Processor Architecture (SPARC)™

microprocessor can execute 10 million instructions per second (MIPS) at a clock speed of 16.67 MHz. Because the architecture of SPARC is independent of both process and application environment, Fujitsu plans significant performance improvements following a migration path through its present CMOS gate array technology. The new microprocessor is targeted at applications that require maximum computing power, including high-performance workstations and systems for computer-aided design, desktop publishing, graphics and image processing, communications and industrial control.

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"SPARC has the unusual advantage of being the only very high-performance 32-bit microprocessor that is thoroughly

proven," according to Kenichi Katashiba, senior vice president of Fujitsu Microelectronics. "The chip is implemented with Fujitsu's widely used C20K gate array process, and Sun Microsystems has tested SPARC extensively in the laboratory and at customer test sites."

SPARC is the result of a joint development effort between

Fujitsu Microelectronics' Advanced Products Division (APD) and Sun Microsystems. APD, formed in 1984 in Santa Clara, California, is chartered to broaden Fujitsu's semiconductor product lines in the American market. The division is responsible for the design of semiconductor products which are responsive to the needs of this market.

"This is the only U.S.-based semiconductor group operated by a Japanese company that is responsible for the complete product development cycle," Katashiba said. "To meet our commitments to North American customers, we believe that a development organization in close contact with system designers who use our products is absolutely necessary. The approach overcomes the difficulty Japanese companies working at a distance have experienced in designing innovative products that closely match the system requirements of U.S. customers," Katashiba said.

The SPARC microprocessor is APD's first product to be

introduced for widespread commercial use in the North American

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market. The division is also working on a local-area network controller chip and a digital signal processor, both scheduled for introduction later this year.

"Although SPARC was designed in the U.S., all fabrication is done in Japan to take advantage of established process technologies and procedures," Katashiba said. "The Fujitsu C20K gate array used to implement SPARC is a 20,000-gate 1.5-micron CMOS technology."

The microprocessor features single-cycle execution for a majority of instructions. Throughput is enhanced by separate 32-bit address and data busses, 120-register file and 4-gigabyte address space.

The simple CPU instruction set includes five categories:

load and store, arithmetic/logical/shift, control transfer,

read/write control, floating-point operations and coprocessor

operations. Program execution speed is enhanced by a triple-port 120 x 32 register file to store frequently used variables. The

triple-port register architecture makes it possible to fetch two register operands and write a register destination simultaneously

in a single clock cycle.

A separate floating-point controller chip also available

from Fujitsu provides a tightly-coupled interface to a Weitek

W164 multiplier and a W165 arithmetic logic unit for a peak

floating-point single precision performance of 2.6 megaflops and

1.5 megaflops, double precision. This floating-point controller

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chip, also used in the Sun-4 workstation, resulted from the joint development effort of the two companies.

SPARC software, available through licensing arrangements with Sun Microsystems, includes Sun OSTM, a licensed derivative of the UNIX(R) operating system; optimizing C, Pascal and FORTRAN compilers; assemblers, debuggers, and other software tools.

Fujitsu Microelectronics will formally introduce its SPARC microprocessor with complete specifications, pricing structure and delivery information later this month.

Fujitsu Microelectronics, Inc., designs, assembles, tests and markets a broad selection of semiconductors and other advanced electronic components. Fujitsu Microelectronics, founded in 1979, is a wholly owned U.S. subsidiary of the Japanese multinational company Fujitsu Limited. The Advanced Products Division of Fujitsu Microelectronics was founded in 1984 to develop very-large-scale integrated circuits for the U.S. market.

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