NEW PRODUCTS

SOUPING UP AN ALREADY FAST 3-D GRAPHICS WORK STATION

SILICON GRAPHICS BOOSTS GRAPHICS SPEED OF IRIS FAMILY BY 44%

Silicon Graphics is dramatically improving the price/performance ratio in fast, high-resolution, three-dimensional, color-graphics work stations. It is speeding up the rate of graphics transformations by as much as 44% with its new Iris 3000 family and is slicing the price tag on its current line of work stations by about one third.

The jump in speed is due to new 8-MHz versions of the company's proprietary Geometry Engine and Accelerator chips, as well as a switch from the Motorola 68010 to the 68020 microprocessor. All the essential performance factors—CPU speed, geometry processing (graphics transformations), memory coupling, floating-point calculations, and file-system performance—have been enhanced in the 3000 family.

The 68020 processor board in the 3000 provides a full 32-bit data bus with a 16-MHz clock speed. Beefing up the Geometry Engine has sped 3-d graphics transformations 44% over the company's 68010-based Iris 2400 and 2300 systems from 69,000 to 86,300 transformations per second. This enables such real-time applications as flight simulation to run at realistic speeds.

Pricing is also aggressive on the new models, starting at $39,000—about the same price as high-end work stations that lack 3-d capabilities, the company claims. And the top-of-the-line 3-d model from its major competitor, Sun Microsystems Inc., can do only 45,000 transformations/s and is priced at about $45,000, according to Silicon Graphics.

PRICES CUT. The company is cutting the price of its Iris 2400 line of work stations by 33% and the Iris 2300s by 29%. These products are aimed at what is becoming the low end of the graphics-terminal market. The new prices mark the first time that a real-time, high-performance, 3-d work station will be available for less than $25,000, according to the company.

The Geometry Engine and its companion Geometry Accelerator, another of Silicon Graphics' custom very large-scale ICs, are responsible for the real-time graphics performance [Electronics, Oct. 20, 1983, p. 113]. A pipeline of 10 or

AIR ACE. Silicon Graphics' new 3-d system does 86,000 transformations per second, suiting it for real-time graphics such as flight simulation and mechanical CAD.

12 125-ns Geometry Engines handles such graphics transformations as object rotation, translation and scaling, four- or six-plane clipping, perspective or orthographic viewing, and scaling to screen coordinates. Geometry Accelerators at each end of the pipeline enable it to maintain its full speed by providing buffering and floating-point conversion.

Both the Iris 3000 memory system and the floating-point processor are tightly coupled to the 68020 CPU with a 32-bit data path. With the closely coupled memory, enough speed is attained so that cache memory built from faster RAMs is not needed. The system, which uses 120-ns RAMs, has 2 megabytes of main memory (expandable to 16 megabytes), eight planes of display buffer memory (expandable to 32), and a buffer to hold the coordinates for the Z axis.

A special addressing mode passes data to and from the floating-point processor at memory speeds—a significant departure from most floating-point systems that require time-consuming handshaking routines for coordination between the floating-point and main processors for every operation.

All the Iris graphics work stations are optimized for applications such as solids modeling, simulation, molecular modeling, seismic and fluid dynamics, and animation for movies and TV. The standard Iris Graphics Library II, an applications-development environment, is a set of subroutines that supports graphics programming.

The library features several capabilities that enhance applications development, including a window manager, depth cueing, Gouraud shading, faster polygon fill, high-resolution Z-buffer operations, and faster pixel access.

The Iris 3010 comes with a 20-megabyte disk drive, and the 3020 and the 3030 models sport 72- and 170-megabyte drives, respectively. The 3010 sells for $39,900, the 3020 for $44,900, and the 3030 for $54,000. All are available now. The Iris 3030 work station comes with

hardware for Ethernet connection and software that supports the Xerox Network System protocols. *–Tom Manuel*

Silicon Graphics Inc., 2011 Stierlin Rd., Mountain View, Calif. 94043. Phone (415) 960-1980   [Circle reader service number 338]

MAPWARE BUILDS CARRIER-BAND NETS

Concord Data Systems' MAPware hardware and software enables original-equipment manufacturers and systems integrators to develop systems compatible with the Manufacturing Automation Protocol for both broadband and carrier-band networks. The MAPware modular architecture includes a MAP interface board, MAP 2.1 software, and MAP modems.

"We're now able to offer all the tools we've offered for broadband modems immediately for carrier-band modems," says Anthony Helies, president of the Waltham, Mass., company. Carrier-band techniques are being applied to subnetworks in MAP environments to solve real-time control problems and cut the cost of network connections [*Electronics*, Nov. 11, 1985, p. 16].

"Because of its architecture, MAPware allows the OEM to choose whatever level of vertical integration he wants," Helies says. The MAP software offers interfaces to layers two through seven of the International Organization for Standardization's open-systems interconnection reference model. It gives OEMs the option of developing interfaces that operate at the bottom layers only or building a full seven-layer MAP 2.1 implementation.

HIGH-SPEED INTERFACE. The MAP Interface Board is a high-speed, intelligent communications controller that fits into the backplane of a programmable device or computer. The board's very large-scale-integration chip set directly implements all IEEE 802.4 requirements, as well as IEEE 802.3 Logic Link Control and Immediate Response Service, which aids in time-critical applications.

Concord's MAPware products can be combined with the company's existing Token/Net Interface Modules, head-end remodulators, and network-management and -diagnostic products to offer complete MAP networks. The MAP interface board uses an Intel 16-bit 80186 microprocessor and an extended iSBX bus. Comprehensive hardware diagnostics, including controller and modem loopbacks and watchdog timers, are also of-

fered as part of the total package.

Along with 512-K bytes of parity-protected multiport RAM, the MAP interface board includes 8-K bytes of nonvolatile configuration memory and 256-K bytes of PROM. The board supports multiple host processors and byte-swap hardware, as well as flexible direct-memory-access control. In addition, all token-bus protocols run without burdening the processor.

Concord's MAPware carrier-band and broadband modems offer identical modem-to-controller interfaces, making them easily interchangeable with any MAPware board. The modems can be configured as a daughterboard assembly mounted next to the controller board or as a stand-alone system connected by a shielded flat cable. The broadband modem operates at 10 Mb/s, and the carrier-band modem runs at 5 Mb/s.

Prices for the MAPware board with software and modem range from $2,850 to $3,500. Shipments are scheduled to begin in April.   *–Debra Michals*

Concord Data Systems Inc., 303 Bear Hill Rd., Waltham, Mass. 02154.
Phone (617) 890-1394   [Circle 339]

CMOS COPIES OF 8086 RUN AT 8 MHz

Two microprocessors have a 20-bit address bus enabling them to access up to 1 megabyte of RAM, eliminating floppy-disk storage in some designs. The MSM80C86-2 and MSM80C88-2 are the only CMOS versions of the 8086/8088 microprocessor that can operate at 8 MHz, their maker says. They are suitable for battery-operated equipment and other very small, low-power microsystems.

Other features include 24 operand-addressing modes and fourteen 16-bit registers. Both are manufactured in 40-pin plastic and 40-pin ceramic DIPs, and in 44-pin leadless chip carriers. They operate over the temperature range of –40° to +85°C.

All models are available from stock. In plastic DIPs, the 86-2 and the 88-2 each sell for $20 in quantities of 100.
Oki Semiconductor, 650 N. Mary Ave., Sunnyvale, Calif. 94086.
Phone (408) 720-1900   [Circle 356]

13-BIT CONVERTER DRIVES STEPPERS

A 13-bit serial-to-parallel converter drives such peripherals as small stepper motors, LED indicators, and triacs. Its wide voltage range—5 to 18 V—covers many battery-operated applications, and its 13 push-pull outputs can provide up to 80 mA of drive current in both directions. Because each output integrates a
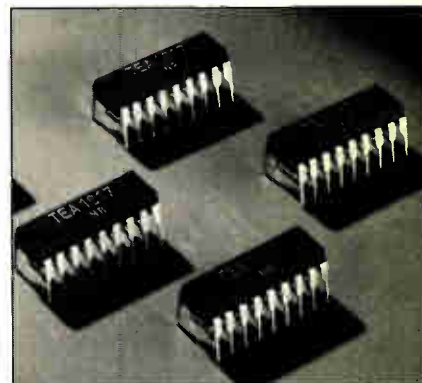
clamping diode, the chip can drive inductive loads directly; this eliminates external diodes and saves board space.

The converter's three-line C-bus, consisting of clock burst, data-line enable, and data, has a clock frequency of up to 50 kHz. Inputs are both TTL- and CMOS-compatible.

Samples of the converter, model number TEA1017, are available immediately in 18-lead plastic DIPs. In lots of 100 to 999, the parts are $2.02 each.
Signetics Corp., 811 E. Arques Ave., P. O. Box 3409, Sunnyvale, Calif. 94088.
Phone (408) 991-2000   [Circle 371]

PLA HAS WINDOW FOR REPROGRAMMING

The C 22V10 is a CMOS programmable-logic-array chip that comes with a window for reprogramming. Programmable macro cells let the user specify each of the 10 potential outputs as either registered or combinatorial. The 10 outputs can be reconfigured individually as inputs or used as combination I/O lines controlled by the programmable array. The part offers up to 22 input terms.

Code for the PLA chip can be developed in standard Cupl or Abel systems. Available in the commercial and military temperature ranges, the part has an 80-mA active current.

Delivery is from stock in quantities of 1,000 to 5,000 pieces. The 25-ns commercial version in a plastic DIP sells for $28.35 per 100; the military 30-ns model in Cerdip costs $72 per 100.
Cypress Semiconductor Corp., 3901 N. First St., San Jose, Calif. 95134.
Phone (408) 943-2600   [Circle 357]