4096-Bit Random Access Memory Chip Developed

A 4096-bit random-access memory monolithic IC is now being characterized by Standard Microsystems Corporation, Hauppauge, N.Y. The new designated product, SMC N-4412, is an electrically alterable memory with decoding and sensing contained on the single monolithic silicon structure.

The 4412 makes use of an SMC proprietary process, Coplamos, which combines the high speed inherent in an N-channel structure with the improved density necessary to the attainment of lower cost per bit. The silicon die is comparable in size to current 1024-bit configurations.

The 4412 is designed for computer and computer-related applications where both high performance and low cost are required; access time is less than 180 nanoseconds.

Production pricing is expected to reach 1/4 cent per bit this year. Prototype quantities are expected to be available this month.

National Develops MM5314 Digital Clock On Single Chip

A complete digital clock on a single chip has been developed by National Semiconductor Corp. Called the MM5314 series, the digital clock circuits contain all of the counting, decoding and multiplexing circuitry required for a 4 or 6 digit electronic clock.

The MM5314 series is made with National's P-channel enhancement mode low threshold process, and operates from a single 11 to 19 volt supply. It operates from a half wave rectified 50 or 60Hz input. This input signal is then shaped and divided by either 50 or 60. Three other counter stages complete the division to 12 or 24 hours.

The built-in multiplexer samples the outputs from these counters and routes them to an on-chip ROM which is programmed to provide both BCD and 7-segment outputs. The display scanning rate is controlled by an external resistor and capacitor. The MM5314 is designed to work with inexpensive plastic transistors for digit and segment driving of standard LEDs or incandescent displays.

The other devices in the series, the MM5311, MM5312 and MM5313, offer package and feature variations on the MM5314 such as 24 and 28-pin dual-in-line packages and one pulse-per-second output. The MM5314, in a 24-pin Epoxy B molded package, is the lowest priced member of the family at $14.25 in 100-up quantities. It offers "hold count", output strobe, 7-segment output and 4 or 6 digit output options.

Applications for the one-chip clock family include desk clocks, industrial timing devices, station-keeping timers, and time base for minicomputers.

Delivery is from stock. Prices range from $14.25 to $16.50 in 100 piece quantities.

Contact: Chuck Signor (408) 732-5000 Ext. 6106.

More N-channel MOS Devices Coming

Advanced Memory Systems, Inc. (AMS), Sunnyvale, California, manufacturer of semiconductor memory systems, subsystems and devices for the computer industry, will be introducing this quarter a new line of memory devices using 'N-channel MOS' technology.

The company said that its first N-channel product will be a 1,024-bit, static random-access memory (RAM), designated the AMS 7001, presently in characterization with design goals of 50 nanosecond access time, 150 nanosecond cycle time, TTL compatibility and address registers on the chip. Power consumption is expected to be 350 milliwatts operating, 30 milliwatts standby. The device will use the standard, 22-pin ceramic/hermetic dual-in-line (DIP) package.

The new N-channel device will be aimed at the market for high-density, ultra-high performance memories that require rapid access and cycle at lowest cost, presently supplied only by bipolar products.

Contact: Advanced Memory Systems, Inc. 1276 Hammerwood Avenue, Sunnyvale, Calif. 94086 (408) 734-4330.

N-channel 1024-bit static MOS RAM

Intel has introduced a low-cost 1024-bit N-channel silicon-gate static MOS RAM that connects to TTL logic without any interface circuits whatever.

The Intel 2102 MOS RAM runs on a single 5-volt supply, accepts standard TTL inputs and generates a standard TTL output. Because the RAM is fully decoded and is static, it requires no external decoding circuits, no refreshing circuits and no clock. It can be used exactly as though it were a TTL circuit - without level shifters, pull-up resistors, input drivers, or any other interfacing circuitry.
only 5 pF. It uses a 1024 x 1 organization and features a 3-state output for OR-tie capability and a chip-enable input to facilitate simple memory assembly and expansion. All inputs are protected against static charges.

The 2102 is the second in a growing family of Intel N-channel memory devices that combine the economy of MOS circuitry with the ease of use of bipolar.

The chip is packaged in a 16-pin silicone plastic DIP.

Price is $25.00 in 100-piece quantities. Delivery is immediate from distributor stock.

Contact: Edward Gelbach, Intel Corporation, 3065 Bowers Avenue, Santa Clara, CA 95051. Phone (408) 246-7501. In Europe, contact Jens Paulsen, Intel European Marketing Manager, Brussels, phone 492003. In Japan, contact Mr. Magami, Intel Japan Inc., Tokyo, phone 03-403-4747.

High Threshold Logic Expands

Motorola's High Threshold Logic (MHTL) Series has begun a new period of expansion, stimulated by the rapidly increasing use of logic in high-noise environments – machine tool and process controllers, computer peripherals, appliances, measuring and dispensing equipment, and so on.

Just introduced are four new MHTL devices. They are: the MC686, a 4-bit shift register (first shift register offered in MHTL Series); the MC684, a decade counter, and the MC685 binary counter (first two counters in the Series); and the MC688, a dual J-K flip-flop in a 16-pin package.

Each of the four new high threshold logic devices is available in a black plastic dual in-line package or in a black ceramic dual in-line package. The standard operating temperature range for the MHTL devices is -30°C to +75°C. However, MHTL ceramic dual in-line devices are available for operation from -55°C to +125°C, and/or with high-reliability processing, on special order.

Prices for commercial/industrial temperature range (-30°C to +75°C) devices range from $2.10 to $5.25 in quantities of at least 100. Availability is off-the-shelf.

All Motorola MHTL devices operate on a +15 volt power supply. Switching threshold voltage is typically +7.5 volts, while dc noise margin is typically 6 volts.

With -15 volt operation, MHTL circuits are easy to interface to both discrete components and the relatively new CMOS logic (Motorola designation, "MeMOS"). Complex CMOS circuits, in combination with MHTL designs, offer the system designer noise-immune medium and large scale circuitry to simplify large systems.

Other MHTL devices planned for introduction in the near future include multi-segment display decoders, inverters, line drivers and line receivers.

Contact: Technical Information Center, Motorola Inc., Semiconduct Products Division, P.O. Box 20924, Phoenix, Arizona 85036.

Low Cost Terminal Buffer By Pulse Communications

Pulse Communications, Inc. has introduced a new series of low cost Terminal Buffers for communications and small batch data entry systems. Designated as the Models 7132, these Terminal Buffers are used to mate low priced teleprinters (such as Teletype® Models 33 or 38) to high speed (1200 baud or higher) data links. The buffered terminal assemblies provide fast message handling with editing, eliminate the need for paper or magnetic tape, are faster than conventional teleprinters, less expensive than CRT terminals, and ideally suited for users requiring hard copy.

The Terminal Buffer contains a 4000 character (1 page) memory; and all circuits required for editing, automatic transmission/reception, answer back, and control handshaking to provide optimum use of the dial-up network or dedicated communications channels. Memory capacity is expandable in modules. Operating controls for all search and editing functions are mounted on the teletypewriter bezel. The terminal buffer itself mounts within the knecwell of the teletypewriter.

Contact: Pulse Communications, Inc., 5714 Communications, Inc., 5714 Pike, Falls Church, Va. 22041.

New Single-Disc Cartridge System Offers Double 2314 Capacity

A disc memory system said to provide 5 to 10 times the capacity of current cartridge systems with corresponding reduction in costs has been introduced by OMI Memories, Inc. of Los Angeles.

Called OMI Series 6000 Disc Memories, the system combines a closed loop track-following system and special narrow 3330-type heads to achieve 666 tracks per inch.

Two models are offered: the 6001, with a capacity of 62 Mbytes with 40 ms access; and the 6002, with capacity of 5 Mbytes and 15 ms access. Both models have a high transfer rate up to 853 Kbytes per second.

Intended for use with minicomputers, OMI Disc Memory Systems have a micro-programmed controller which permits unusual flexibility and efficient use of the advanced features of the disc drive units. Extensive error detection and error correction means are provided. Other features of the OMI controller are overlapped seeks and rotational position sensing for high throughput, command chaining and data searching. Disc drive: 100 quantity $5400.00

A demonstration may be arranged by contacting the company:

OMI Memories, Inc., 5261 West Imperial Hwy., Los Angeles, Calif. 90045.

Phone (213) 641-7100.

Space Saving

Large Illuminated Display Units

A new half-inch thick 8-3/4-inch-square, flat-screen alphanumeric and graphics display device, called a Digivue® display/memory unit, capable of providing illuminated displays of any combinations of letters, numbers, graphics and symbols. The flat, half-inch-thick display surface can be conveniently mounted in display terminals for desk-top operation as easily as it can be physically attached to a wall or other highly visible location.

The new, large display units include two perpendicularly arranged sets of 512 parallel electrodes which produce over 260,000 discrete discharge sites at a density of 3,600 sites per square inch. Complete pages of information will fit the new Digivue display/memory unit's large format.

Letters, numbers and graphics can be displayed on the units with the aid of any keyboard input device capable of transmitting digital information, or by direct address from any digital computer. Information can also be entered onto the panel display of each unit by using a light pen or other pointing device.

In its construction, the half-inch-thick panel portion has an inert gas or plasma
sandwiched between two glass plates. Metal-lic conductors are deposited on the two sheets of tin glass. A dielectric layer is applied over the electrodes and the plates, mounted opposite each other with their conducting lines at right angles, forming a matrix. Digital signals select the appropriate matrix intersections for the gaseous discharge that provides the illumination to form the alphanumeric characters and graphic symbols displayed on the panel.

In announcing the availability of the new Digivue display/memory units, Owens-Illinois, Inc., which produces the panels with supporting electronic drive circuitry for addressing them, said it will market the displays to all equipment manufacturers and producers. The company is also willing to work with manufacturers toward the development of their products.


**ICE A/D Encoder Module Features 56 MHz Word Conversion Speed and 4-Bit Resolution**

The Model IAD-2104N A/D Encoder Module, designed to advance the processing of signals into the ultra-high frequency area, has been introduced by Inter-Computer Electronics Inc. (ICE), subsidiary of American Electronic Laboratories, Inc. (AEL).

ICE Model IAD-2104N converts real time signals such as Radar, Gamma-Rays, X-Rays, Wide Bandwidth Television, Lasers and Infrared to 4-bit digital words at conversion rates up to 65 MHz with an accuracy of ±0.5 LSB.

Featuring a 200-pico-second aperture time, A/D Encoder Model IAD-2104N utilizes an ICE comparator with extremely fast switching speed. An input bandwidth of 100 MHz is achieved by employing microwave processing techniques designed to perform with the ultra-high-speed components the A/D encoder.

Atomic Energy Commission standard Nuclear Instrumentation Module (NIM) pack-

aging allows configuring of systems into a standard 19" NIM chassis for ease in maintainability and calibration, and provides a significant improvement in the signal termination, circuit layout and grounding planes of an A/D converter system.

Request additional information from Inter-Computer Electronics Inc., MS/1123, P.O. Box 507, Lansdale, Pa. 19446.

Inter-Computer Electronics designs, develops, manufactures and markets a complete line of ultra-high-speed analog-to-digital converters, fast-settling digital-to-analog converters, computer interface equipment, and data acquisition systems.

Contact: A. Rossett, (215) 882-2929, x 238.

**Shigoto Industries Introduces GaAs Negative Resistance P-N-P-N Led**

A gallium arsenide P-N-P-N light emitting diode with negative resistance and green visible radiation at room temperature has been developed by Sharp Corporation, Japan, and introduced through Shigoto Industries Ltd., exclusive U.S. representative for Sharp photo-electronic components.

The new GaAs negative resistance LED also offers an infrared output about 50 per cent higher than standard LEDs without negative resistance when both are operated at the same input power. The Sharp GND-50G diode, which produces visible radiation at 5400A and infrared radiation at 9400A, features controllable light output by adjustment of input current, and has fast turn-on switching time up to 1 μsec.

Circuit applications of the negative resistance LED include amplification of signal conversion to light output; oscillation of electrical signal and conversion to oscillating light output; bistable switch or memory action; light output modulation, and optical-electronic coupler and isolator.

The high efficiency emitter is rated at 50 mA, DC nominal 100 mA maximum continuous current; pulse ratings reach 2A maximum. Maximum power consumption rating is 140 mW DC.

Ruggedly constructed for long life, high reliability performance in instruments and control systems photo-electric appliances and digital circuit devices, the LED is designed to meet O.E.M. requirements for easy handling and compactness. The Sharp GND-50G diode has a maximum outside diameter of 0.211” and an overall length of 0.722.”

Contact: Shigoto Industries Ltd., Empire State Building, 350 Fifth Avenue, New York, N.Y. 10001.

**I.I. Communications Develops LSI/MOS Digital Modem For Terminal Manufacturers**

A unique "build-it-yourself" LSI modem kit developed by I.I. Communications, an FMC Affiliate Company, is providing a dual solution to the "custom" supply problem facing remote terminal manufacturers.

Making practical use of LSI/MOS technology, the I.I. 300 Modem is smaller than any other 113 series unit. And since it is available in either a p.c. board, or as an easily-assembled kit, users have complete flexibility in configuring it to fit nearly anywhere in their terminal. In the kit form, the I.I. 300 saves up to 50 percent of the cost of present 113 series modems. The I.I. modem can easily be configured to meet particular customer needs and requirements.

The heart of the I.I. 300 is an LSI circuit containing the modulator and de-modulator. This MOS chip was developed as a result of a long-term cooperative R & D program by I.I. Communications and North American Rockwell.

In conjunction with the unique MOS chip design, the I.I. 300 has a special carrier detect circuit to provide high immunity to false carrier recognition. A crystal oscillator provides high carrier frequency stability. Operating power is generally provided by the terminal.

The modem is configured as a 113A equivalent with either TTL or EIA interfaces, and as a 113B equivalent with Auto Answer capability when used with the CBS coupler, or manual answer when used with a CDT coupler. Other configurations can be achieved with the addition of modular circuits.

In kit form the modem is priced at 50 percent of the cost of most 113 modems — $65 per unit in quantities. Regular orders are 100 units minimum, with 30 days delivery. Test units are available on a pair basis.

For additional information on orders or design assistance, contact I.I. Communications, 139 Terwood Road, Willow Grove, Pa. 19090.