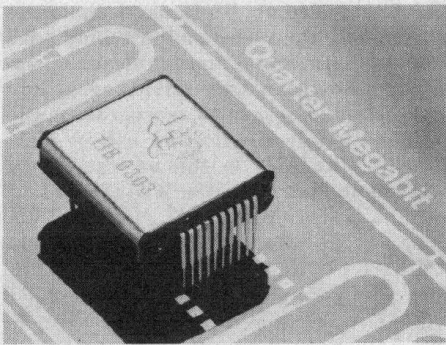


NEW PRODUCTS

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Quarter-million-bit magnetic bubble memory announced by TI

Sample quantities of a new quarter-million-bit magnetic bubble memory priced at \$500 each will be available in the fourth quarter of 1978, Texas Instruments has announced. The company also said its 92K-bit bubble memory is now in volume production and available six weeks after receipt of order at \$100 in 100-piece quantities. Interface and control circuits for the 92K device are currently available, as well, TI said.

Designated the TIB0303, the quarter-million-bit device with 3-micron-diameter magnetic bubble domains uses separate I/O, minor loop architecture featuring block replication of data, and separate read and write tracks with minor loop data storage.

A total of 252 minor loops, each consisting of 1137 bubble positions, results in a single-chip memory capacity of 286,524 bits. However, 224 loops are utilized resulting in a maximum data capacity of 254,688 bits.

Data bits are written into the write track and exchanged with stored data in the minor loops via swap gates. Data blocks are replicated simultaneously at minor loop and output track junctions, rather than serial duplication which is characteristic of major/minor loop archi-

ture. Consequently, power-down cycle time is significantly reduced from 12.8 msec in the 92K-bit major/minor loop configuration to 12.5 μ sec for block replicate, representing three orders of magnitude improvement, TI states.

Other key features include asymmetric chevron design for improved bubble propagation and transfer, merged data that allows a continuous flow of data bits at the read track, and a dedicated loop for storage of on-chip redundancy information and address synchronization.

Performance specifications at 100-kHz operation are an average access time of 7.3 msec for the first bit of the 224-bit page and a typical power consumption of 0.9 W for continuous operation. A data-merge function allows a read data rate of 100K bits per second. Operating temperature is 0° to 50°C with nonvolatile storage range of -40° to 85°C.

Bubble control functions such as generate, swap, block replicate and redundancy replicate are executed by providing current pulses through the appropriate control elements on the chip.

The bubble chip is composed of a gadolinium-gallium garnet substrate upon which a magnetic epitaxial film is grown. Patterns of permalloy metal are deposited on the epitaxial film to define the path of the bubble domains in the presence of a rotating magnetic field. As the field rotates, the bubble domains move under the permalloy pattern in shift register fashion.

Taking a systems approach, TI will offer a family of interface and control circuits for the TIB0303 quarter-million-bit bubble memory, in the second quarter of 1979. These peripheral circuits will include the TMS9922 and TMS9923 controllers, function timing generator, function driver, two coil drivers, and sense amplifier.

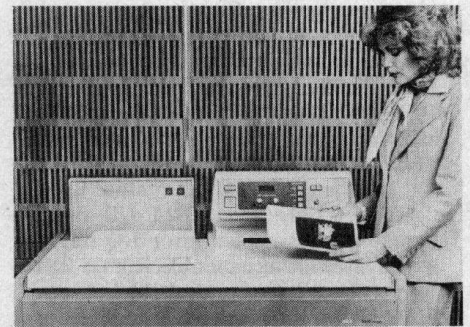
Main features of TI's block replicate bubble memory controllers will be compatibility with TMS9900, TMS9980, TMS9985, and TMS8080 microprocessors and TMS9911 direct memory access con-

troller, on-chip redundancy mapping and synchronization, multipage transfer capability (1 to 1137 pages), I/O control for parallel driven MBM systems, and single +5-V supply.

An evaluation subassembly consisting of a bubble device and support circuitry will be available in the fourth quarter of 1978.

The TIB0303 will be offered in a 20-pin DIP, measuring 1.2 x 1.2 x 0.4 inches. The package contains a quarter-million-bit bubble chip surrounded by two orthogonal coils that provide the rotating magnetic field, a permanent magnet set and a magnetic shield to protect data from external fields.

Reader Service Number 10



Color prints on plain paper directly from computer graphic systems are created in seconds by the new Xerox 6500 color graphics printer. The printer combines laser scanning and xerography to produce computer-created images at the rate of more than three a minute or 192 an hour. The machine also can be used as a color copier and, with a slide adapter accessory, can produce full-color prints on plain paper from 35 mm slides. First deliveries of the 6500, priced at \$25,000, are scheduled for this month.

Reader Service Number 11