Where to go in MOS debated in 'Silicon Valley'

SUNNYVALE, CALIF.—Which of the proliferating MOS technologies will win out in the 70s? A panel of manufacturers including IBM, National Semiconductor, Intel, General Instrument, Mostek and American Microsystems debated this question last month in front of 500 of their competitors at a local chapter meeting of the IEEE in the heart of semiconductor land.

The technologies they considered were N-channel, high voltage P-channel, and four low-voltage P-channel types. The low-voltage types include silicon gate; metal-nitrous-oxide semiconductor; ion implantation; and crystal-orientation-100 aluminum-gate. Eventually every manufacturer will use his favorite combination of the newer technologies. Meanwhile, high-voltage P-channel, the first of the MOS technologies, will be around for awhile if only because it is well understood.

IBM's L. V. Gregor claimed considerable success making N-channel devices in the laboratory, but he declined to say when IBM will be using this technology. N-channel is considerable faster than P-channel, but also far trickier to make.

All the technologies, including high-voltage P-channel, can be passivated by placing a glass layer over the top, making it possible to package products in low-cost plastic.

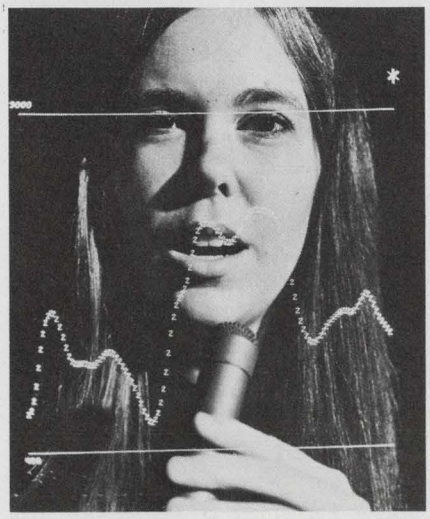
The panel agreed that silicon gate can save area in random logic chips that contain a high ratio of interconnects to active devices. However, Floyd Kvamme of National Semiconductor argued that this is not an advantage in very regular structures such as ROMs, where the area eaten up by contacts between the two layers of interconnects is large.

L. J. Sevin, president of Mostek, pointed out that the ion-implant technique (wherein the gate region is bombarded by boron ions to lower the threshold voltage) can also produce depletion-mode transistors. Their turn-off time is faster, and they consume less area.

Engineers make it easier for computers to talk

New techniques of analyzing speech sounds by engineers at Bell Telephone Laboratories have made it considerably easier for computers to talk. Previously, information based on samples of speech waveforms was stored in a computer and later synthesized to form speech.

The new method, in which vocal tract resonances are converted to numbers, takes between one-fiftieth and one-hundredth the amount of information normally required to produce computer speech. This makes it practical for the first time to store large vocabularies of synthetic speech in talking computers, according to Bell Labs.



Words are turned to numbers and stored in one-hundredth the space previously required to make a computer talk.

The Murray Hill, N. J., research and development organization points to a range of telephone communication services that may be provided once computers can talk as easily as they print out information:

- A computer "librarian" could provide publication information in response to a telephone request.
- Computer "weather reporters" in aircraft or space vehicles could give verbal reports.

Super LSI predicted, along with 4-chip TV

Metal nitrous oxide semiconductor (MNOS) technology will give rise to 100,000 gate-per-chip devices, C. Lester Hogan, president of Fairchild Camera and Instrument Corp., told the 1970 Hybrid Microelectronics Symposium in Los Angeles.

In commenting on other progress in microelectronics, he noted that by the middle of 1971 Fairchild would be delivering to a Japanese company, on a single chip, the electronics for an entire desk-top calculator.

And speaking of linear circuits, Dr. Hogan predicted that by the middle of next year the circuitry for a complete black-and-white TV would be put on three or four chips. Color TV? That will require six chips, Dr. Hogan said.

Memory battle heightens at computer show

The long-heralded battle of the ferrite core vs semiconductor memories was finally joined at the 1970 Fall Joint Computer Conference as three manufacturers showed operating mainframes that use fast semiconductor storage. All these mainframes had previously been announced, but they were receiving their first public exposure at the Nov. 17-19 meeting in Houston, Tex.

The three computers were all minis, and two of the companies—Four-Phase Systems, Cupertino, Calif., and Data General Southboro, Mass.—were attracting a large share of the 20,000 registrants. The third minicomputer