



## TECHNOLOGY

# Novel Multiple-State SRAM Cell Using Multiple-Peak Negative Differential Resistance Devices (RTD)

## OVERVIEW

The device, developed by researchers at the University of Maryland, Department of Electrical Engineering, operates using Resonant Tunneling Diodes (RTDs) and promises to be a memory device that can provide a lower cost per function than conventional CMOS DRAMs. This invention, a single structured SRAM-like device, represents a new class of memory chips and is expected to have a major impact on the development of high density static random access memories. In addition, this invention can be useful in the development of multi-level memory chips. The first experimental results yielded 11 values (levels) of memory storage with potential to increase the number of levels many fold. The device can be used in conjunction with a binary access interface, resulting in high density storage cells.

Key features of this invention are as follows:

- Single device -- as opposed to current SRAMs, which require six MOS transistors;
- Simple circuitry -- the device requires no isolation of positive and negative channels, as do CMOS devices;
- Faster than CMOS or BJT ICs;
- Multiple-valued memory cell -- experimental results thus far have produced 11 values;
- Immediate applications are seen in storing high density binary encoded multi-valued information.

## CONTACT INFO

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## Additional Information

### INSTITUTION

University of Maryland, College Park

### PATENT STATUS

A U.S. patent, #5,280,445, has been issued on this technology.

### LICENSE STATUS

Available for exclusive license

### EXTERNAL RESOURCES

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