**A SINGLE-ENDED WITH DYNAMIC FEEDBACK CONTROL 8T SUBTHRESHOLD SRAM CELL**

**Abstract:**

A novel 8-transistor (8T) static random access memory cell with improved data stability in subthreshold operation is designed. The proposed single-ended with dynamic feedback control 8T static RAM (SRAM) cell enhances the static noise margin (SNM) for ultralow power supply. It achieves write SNM of 1.4× and 1.28× as that of isoarea 6T and read-decoupled 8T (RD-8T), respectively, at 300 mV. The standard deviation of write SNM for 8T cell is reduced to 0.4×and 0.56× as that for 6T and RD-8T, respectively. It also possesses another striking feature of high read SNM∼2.33×, 1.23×, and 0.89× as that of 5T, 6T, and RD-8T, respectively. The cell has hold SNM of 1.43×, 1.23 ×, and1.05 × as that of 5T, 6T, and RD-8T, respectively. The write time is 71% lesser than that of single-ended asymmetrical 8T cell. The proposed 8T consumes less write power 0.72×, 0.6×, and 0.85× as that of 5T, 6T, and isoarea RD-8T, respectively. The read power is 0.49× of 5T, 0.48× of 6T, and 0.64× of RD-8T. The power/energy consumption of 1-kb 8T SRAM array during read and write operations is 0.43× and 0.34×, respectively, of 1-kb 6T array. These features enable ultralow power applications of 8T.

**Index Terms**—Single ended, static noise margin (SNM), static RAM (SRAM), subthreshold, ultralow power.

**TOOLS:**

1. **XilinxISE 14.7**

**LANGUAGE:**

1. **VerilogHDL**