

## DATA IMPRINT USING SRAM

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### ABSTRACT:

In today's world, Digital SRAM is one of the most important circuit parts for a digital system since it contains a number of stored data for system operation. The stored data may contain some secret /confidential /sensitive keys for encryption and decryption of the essential information especially in defence industry. Nowadays the hackers always easily predict the SRAM information from the data imprint effect on the SRAM although the power supply is off.

**Keywords**—Digital SRAM, power supply, encryption, decryptions, data imprint.

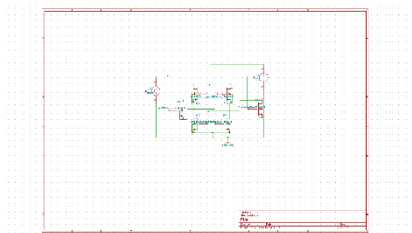
### REFERENCE CIRCUIT DETAILS:

A possible solution for the prevention of data imprinting in the SRAM is to regularly move, shift or alter the secret/confidential/sensitive data to either various locations (within the same SRAM array) or other (separate) memories so that the strength of the data imprint becomes insignificant. Nonetheless, the hardware cost and the power cost of these solutions would be large, limiting their practicability for some power-critical applications. Another preferable solution is to realize a toggling SRAM where each SRAM unit has a master cell and slave cell.

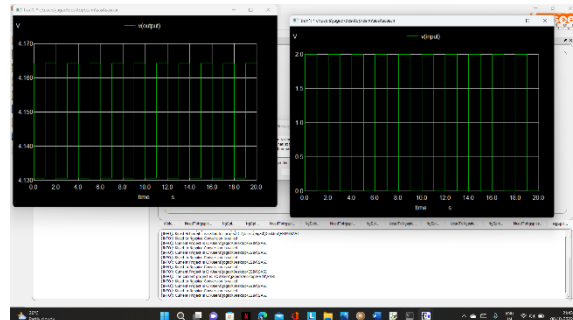
During the toggling operation, the frequency scaling reduces the dynamic power dissipation until the minimum energy point. The DVS mechanism further reduces the leakage power dissipation (at the minimum energy point) by scaling the supply voltage downwards to near-threshold voltage, hence minimizing the overall idle power dissipation. For completeness, we design and simulate (in 65nm CMOS process) a 1kbyte×8-bit DVS non-imprinting SRAM, which can be used in the

power-aware high secured crypto-chip for defence application, telecommunication, etc..

### DIAGRAM:



### REFERENCE OUTPUT WAVEFORM:



### REFERENCE:

[https://www.researchgate.net/figure/Timing-Diagram-for-Toggling-Operation\\_fig5\\_283100712](https://www.researchgate.net/figure/Timing-Diagram-for-Toggling-Operation_fig5_283100712)