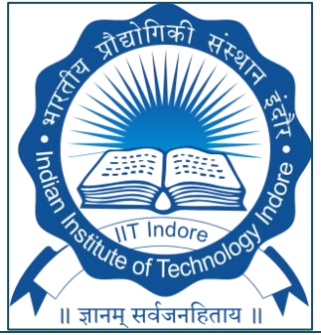
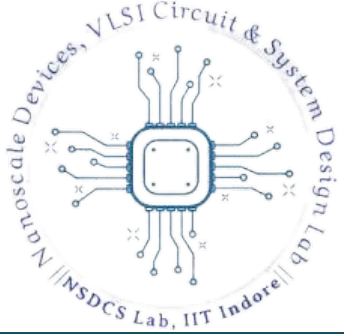
# REPORT ON 4x4 SRAM ARRAY

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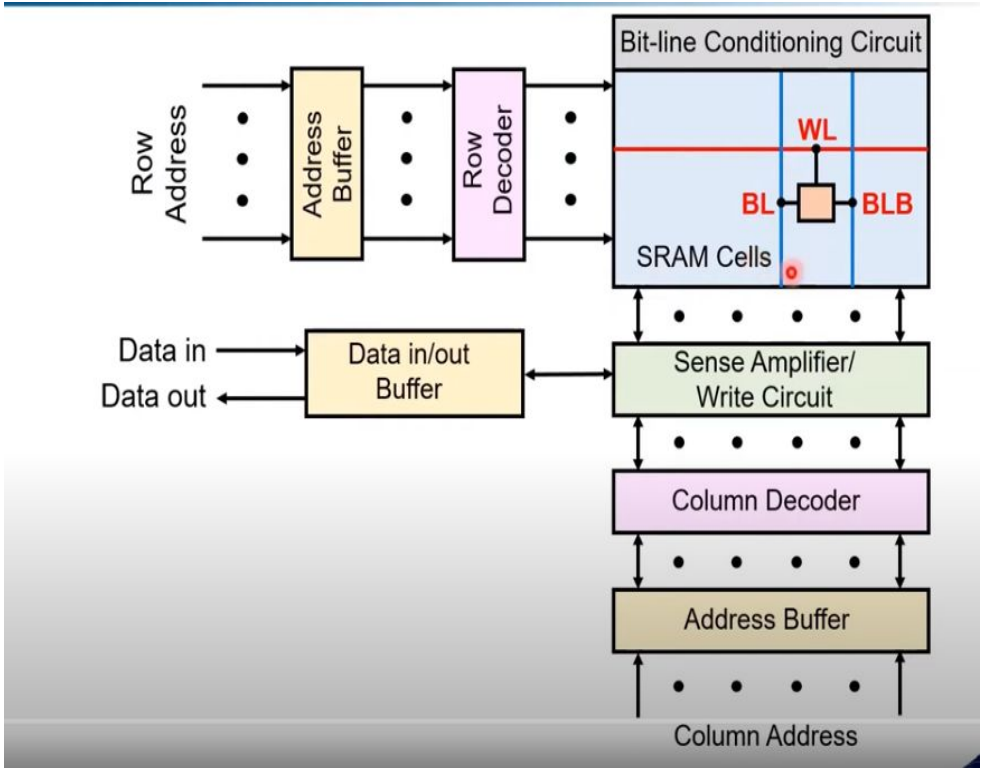
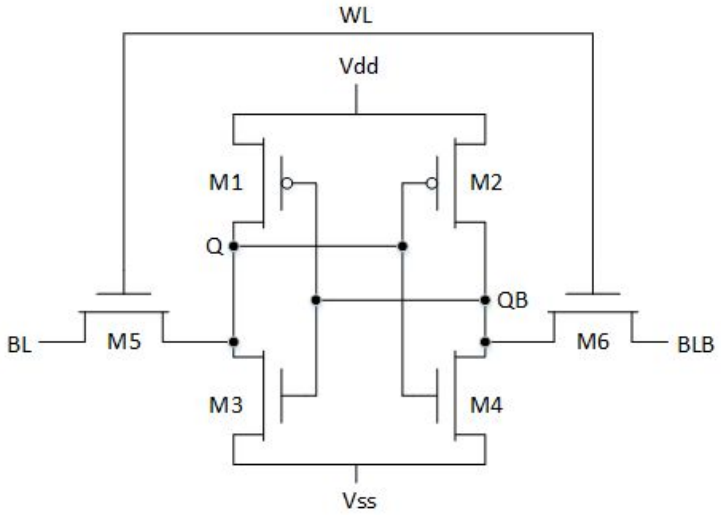
Lab In-Charge: Prof. Santosh Kumar Vishvakarma

Presented by: Akash Pandey
(2302102035)

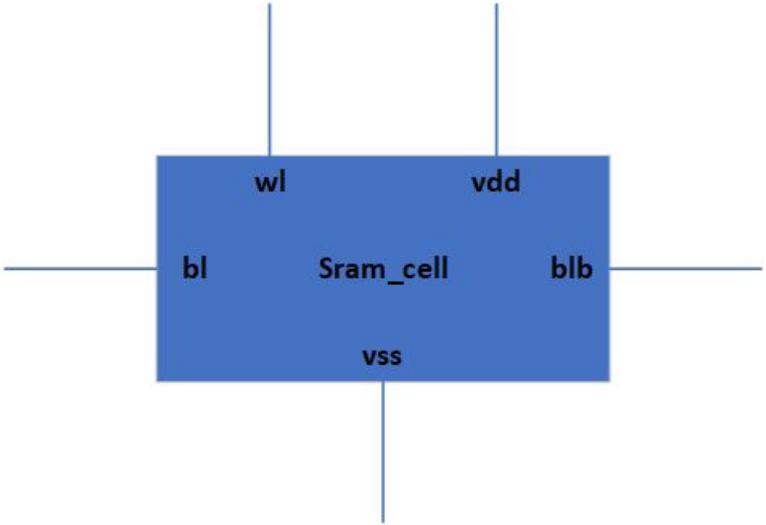
- **Basic Building Blocks:**
  - 6T SRAM cell
  - Sense Amplifier
  - Write Driver
  - Pre-charge circuit
  - Row Decoder
  - Column mux



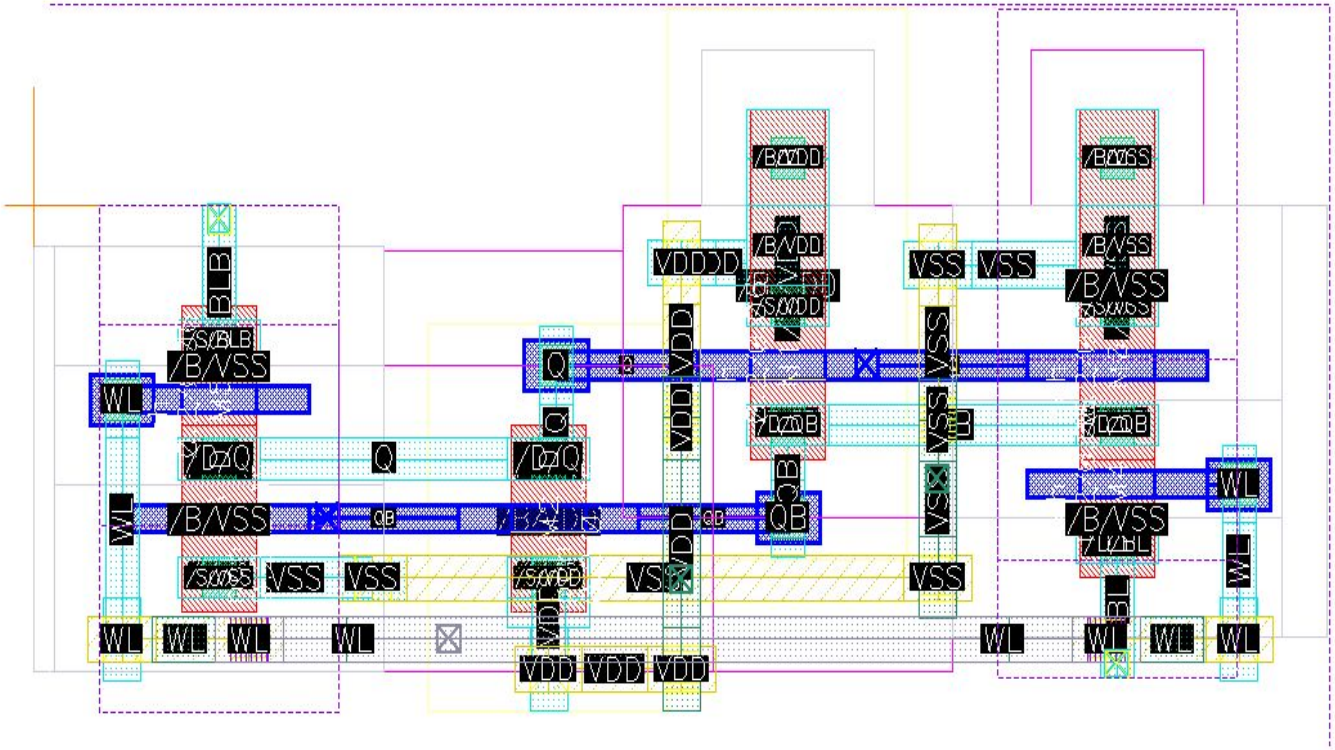

Reference: [Lecture 39: SRAM Architecture & Sense Amplifier | MOS VLSI Design| Dr. Ambika Prasad Shah |IIT Jammu - YouTube]




6T SRAM Schematic

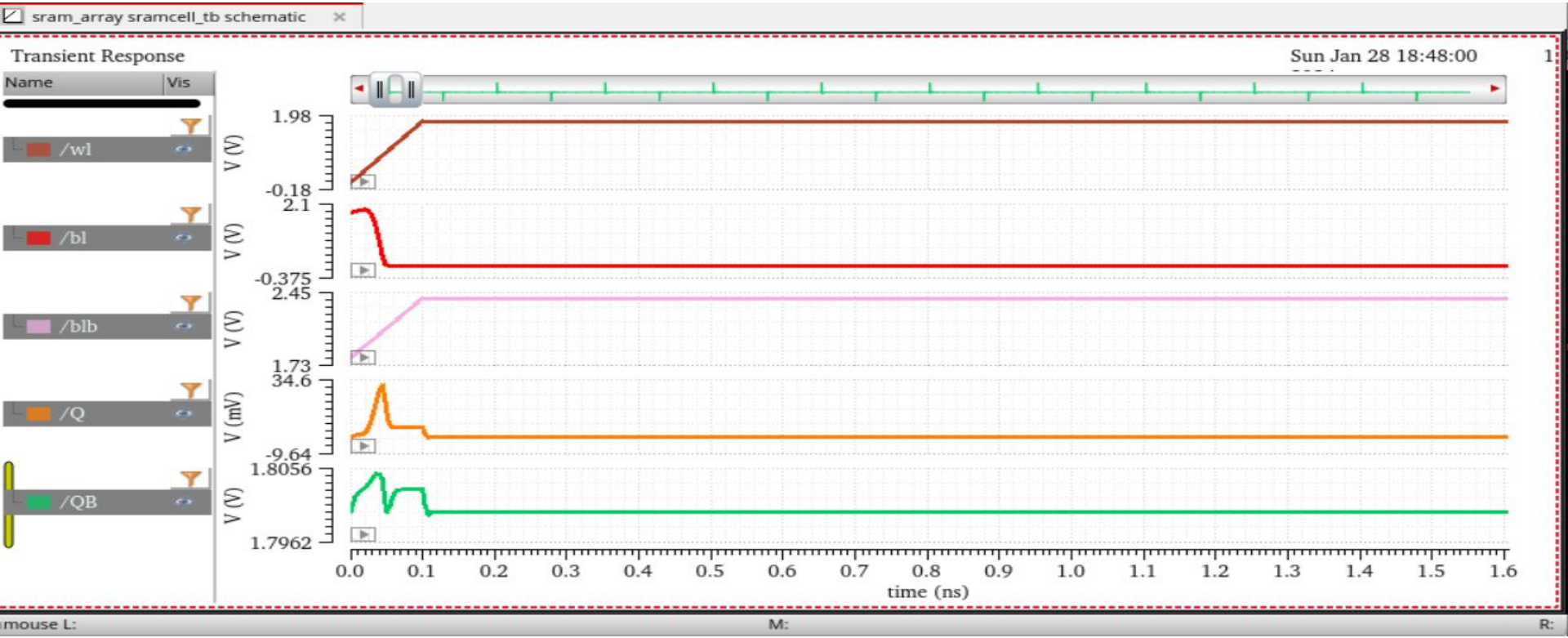



6T SRAM Symbol



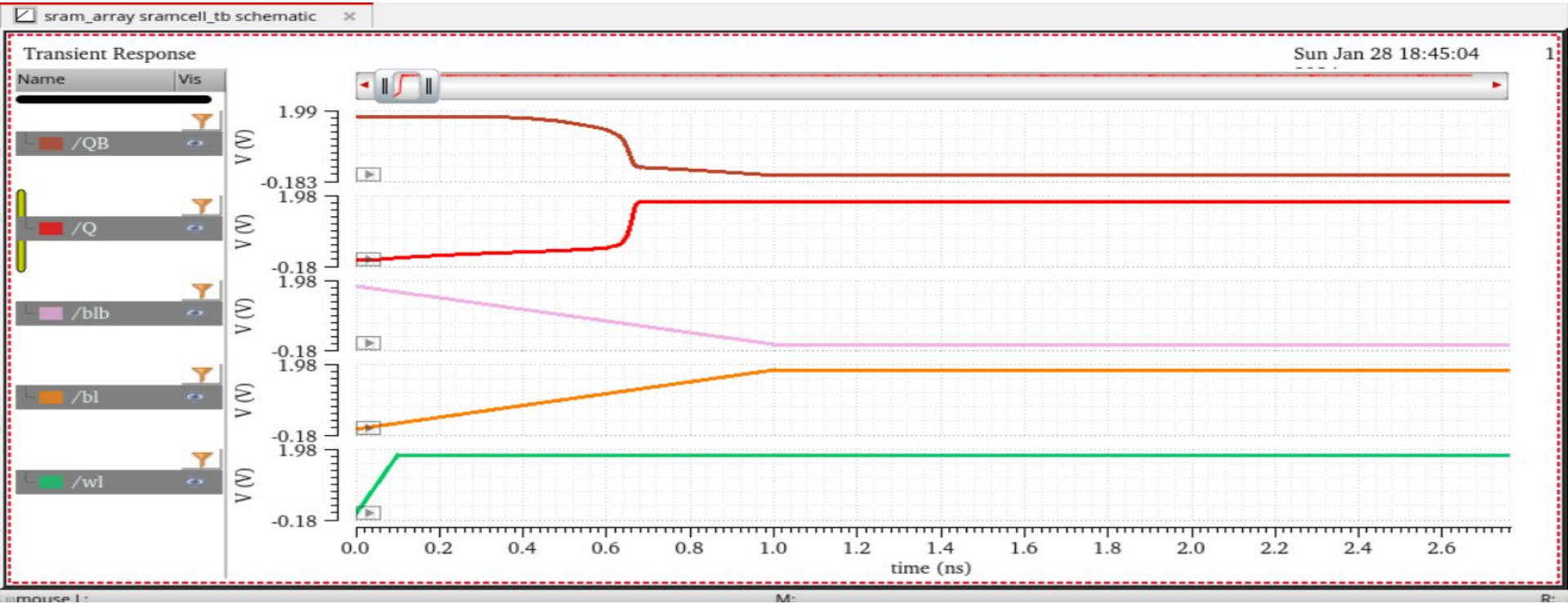

6T SRAM Layout

- **1 Bit 6T SRAM Read, Write Operation**



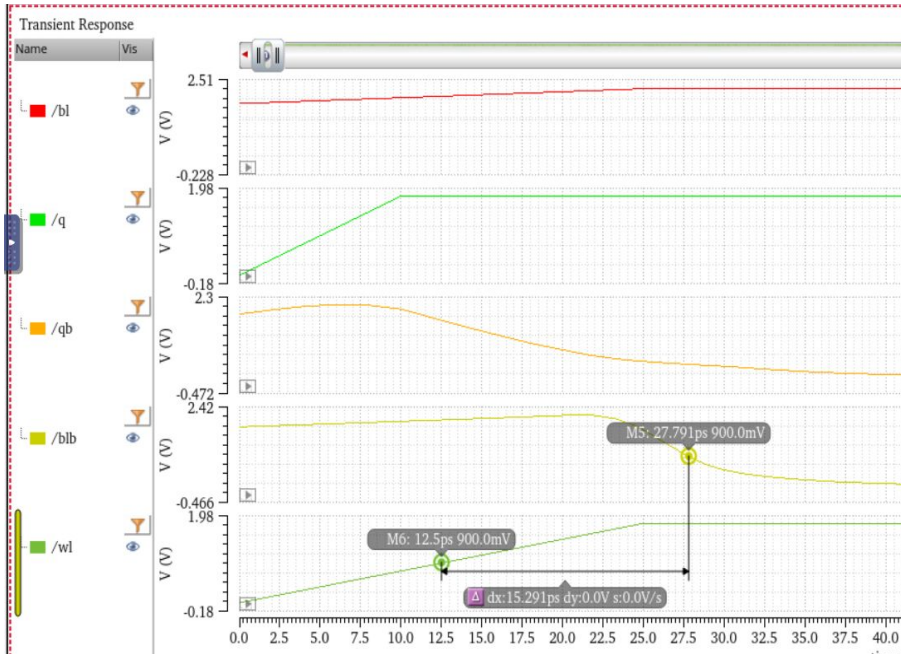

Read-0 operation

# • 1 Bit 6T SRAM Read, Write Operation

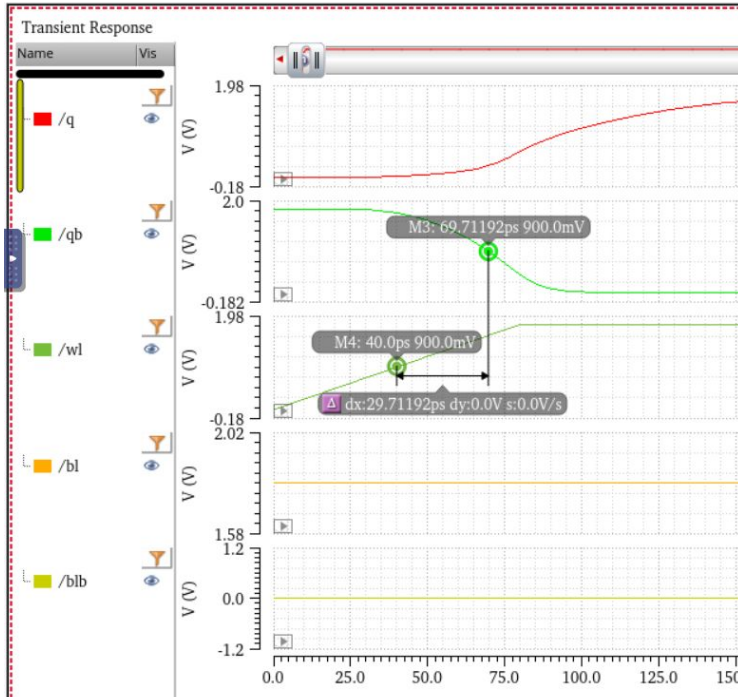



Write-1 operation

# • 1 Bit 6T SRAM Read,Write Operation delay

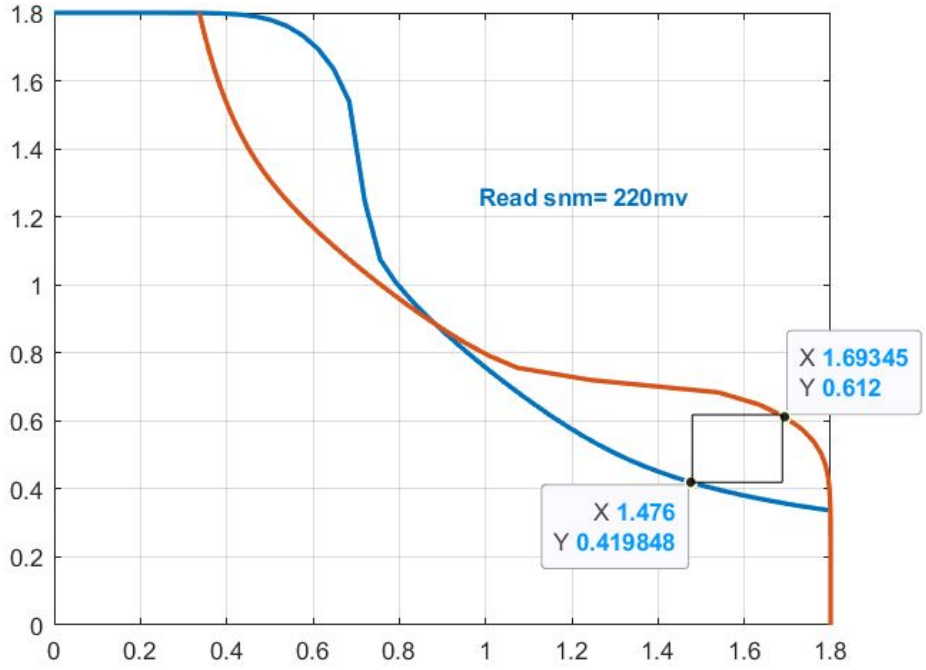



Read Delay



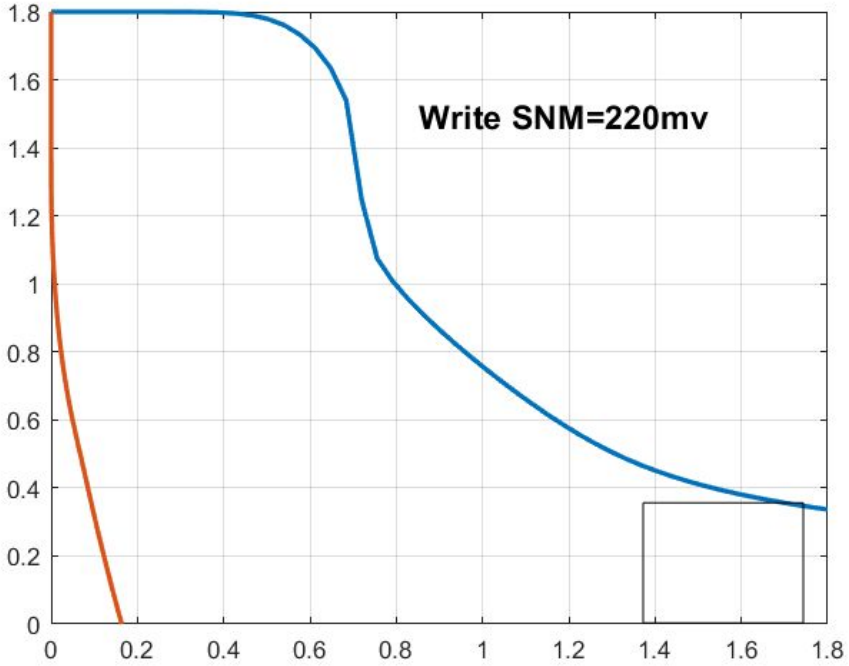

Write Delay

# ● 1 Bit 6T SRAM Read SNM in Matlab

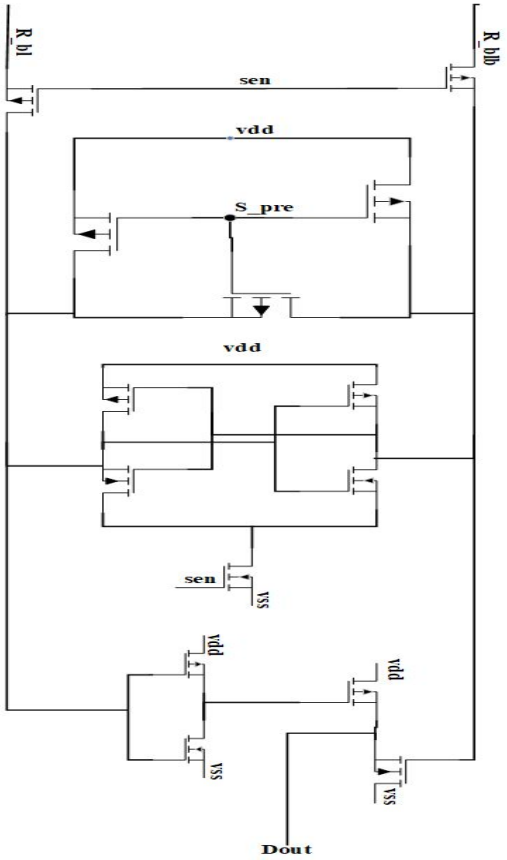



Read SNM

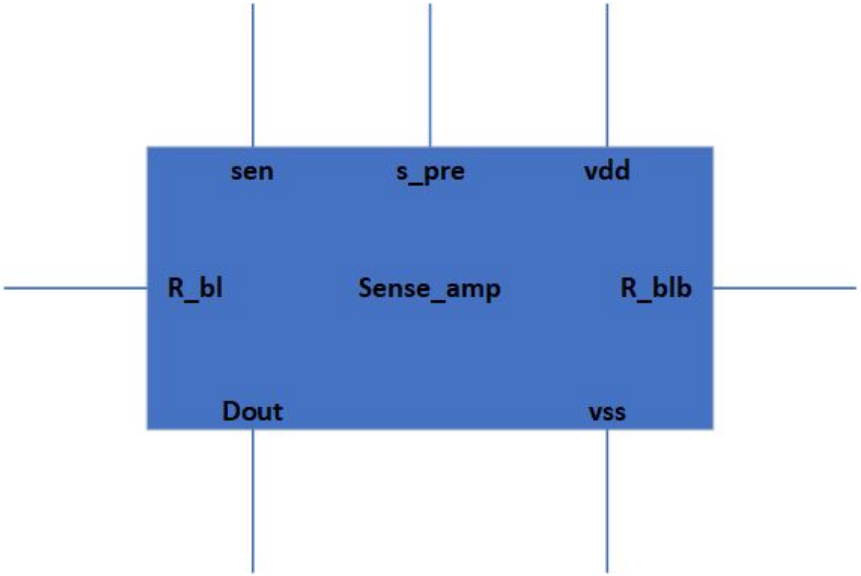
# ● 1 Bit 6T SRAM Write SNM in Matlab




WriteSNM

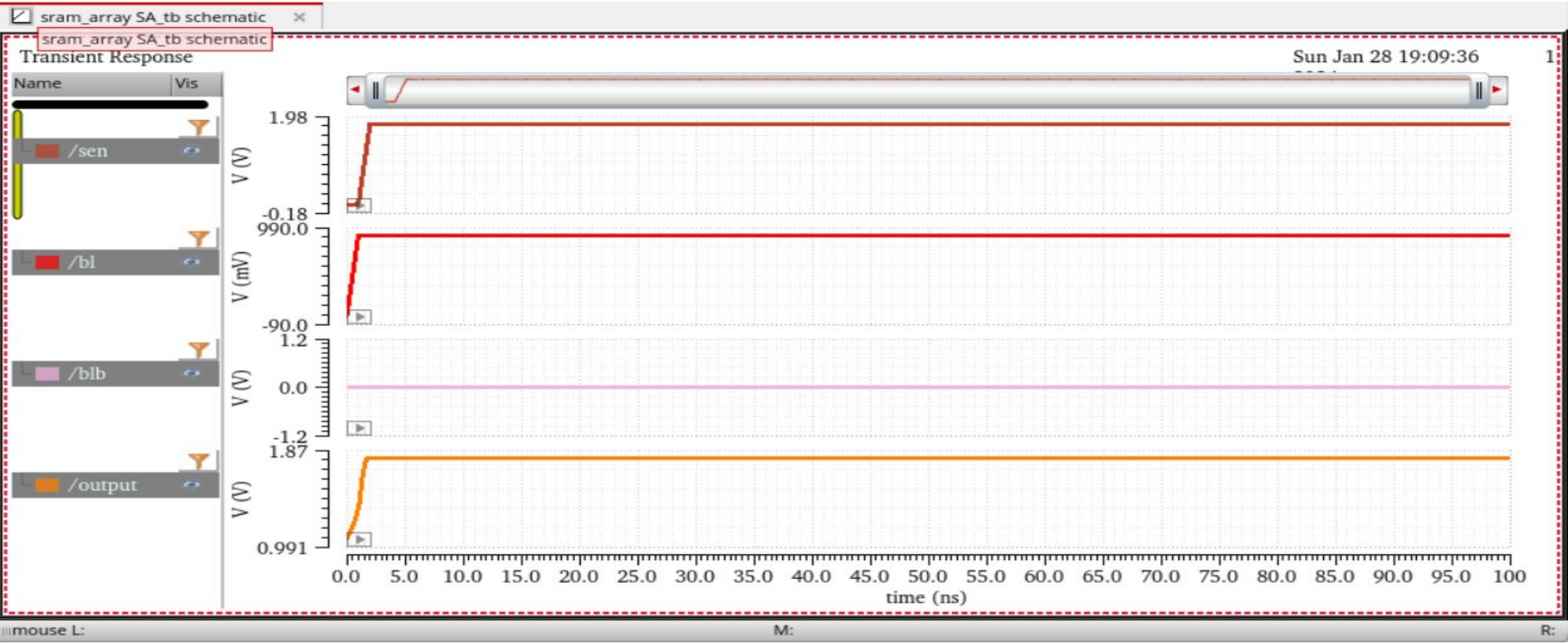



Latch based Sense amplifier Schematic

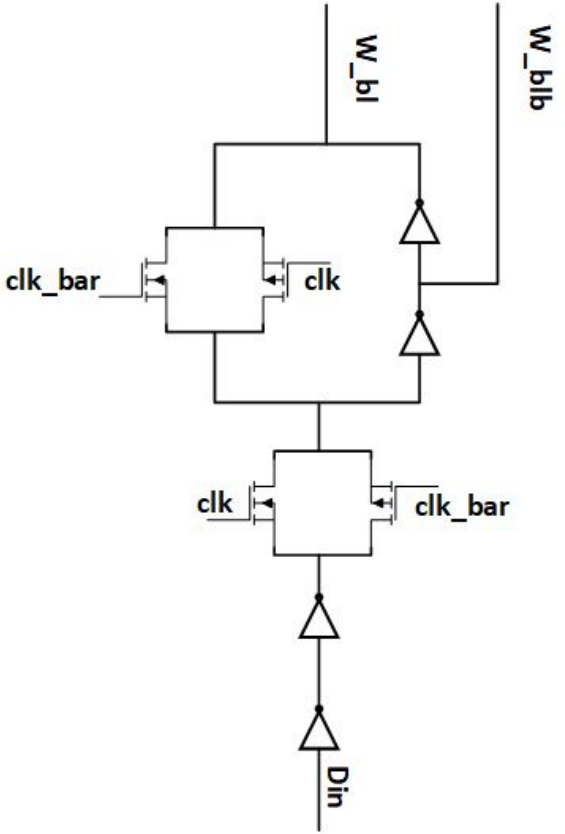



Latch based Sense amplifier symbol

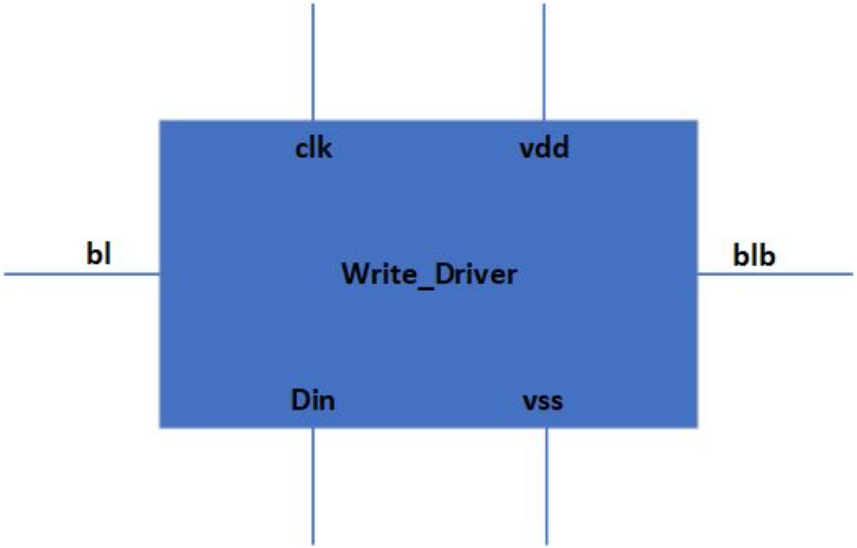
- **Sense amplifier Operation**




Read-1 operation

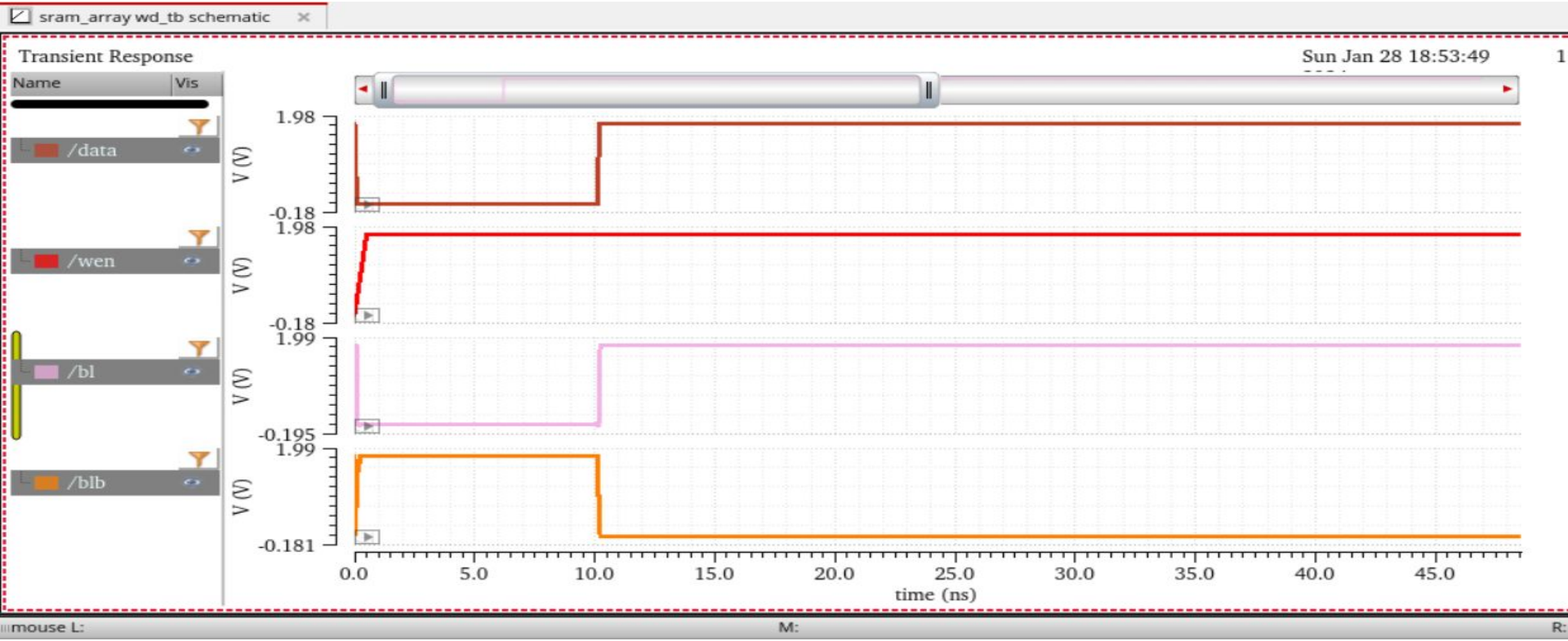



Write Driver schematic

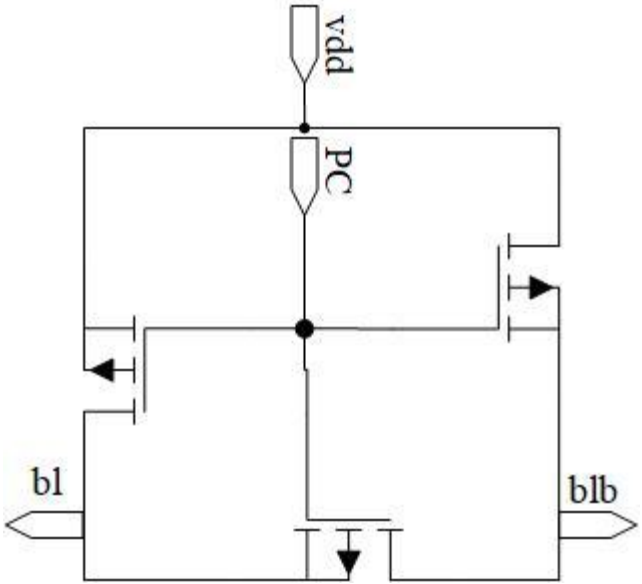



Write Driver symbol

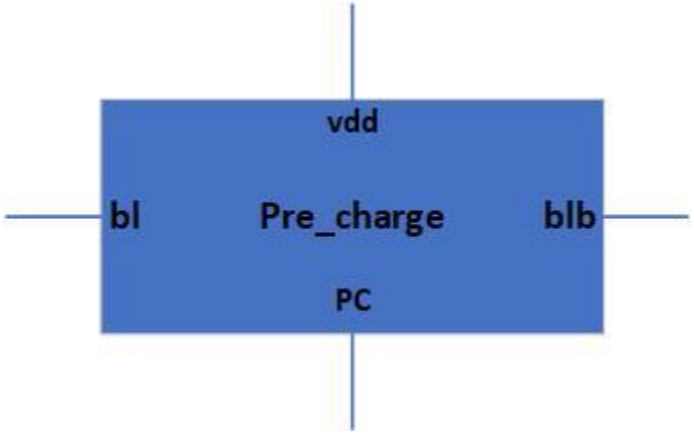
- **Write driver Operation**



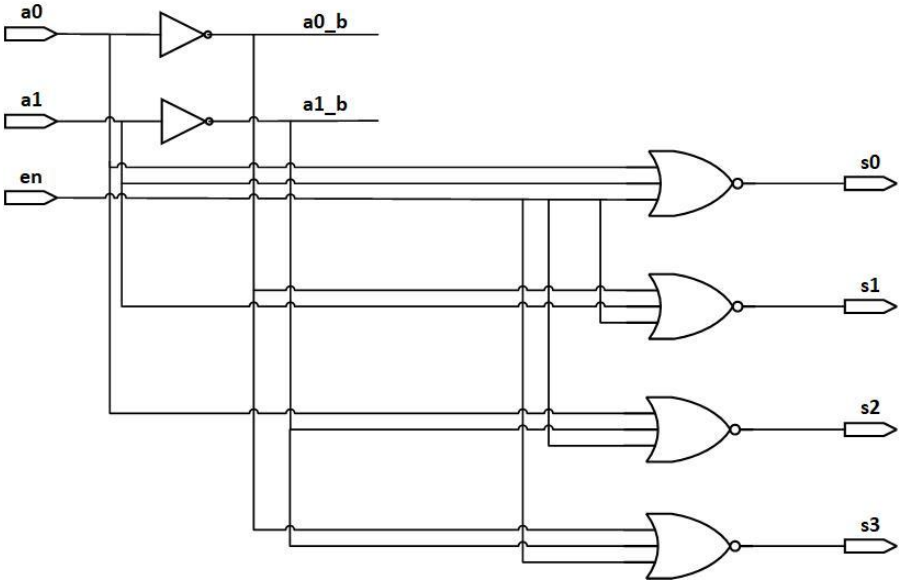

Write operation



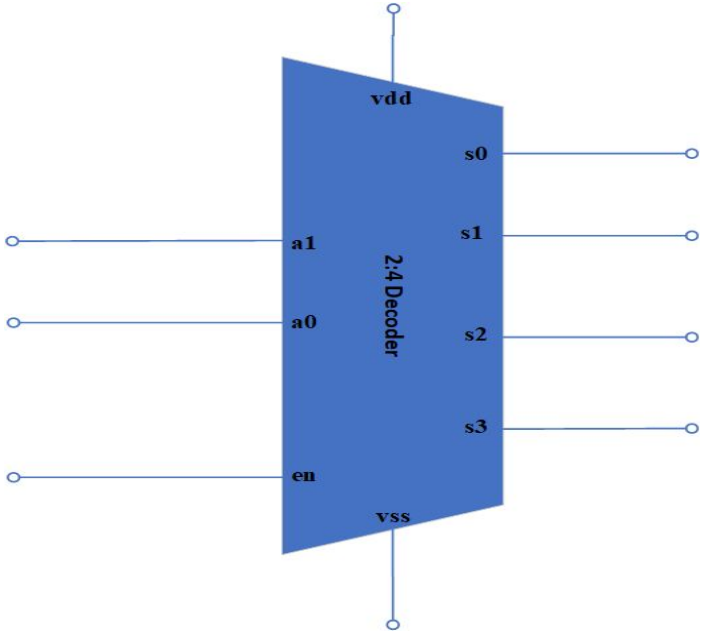

Pre-charge circuit schematic




Pre-charge circuit symbol

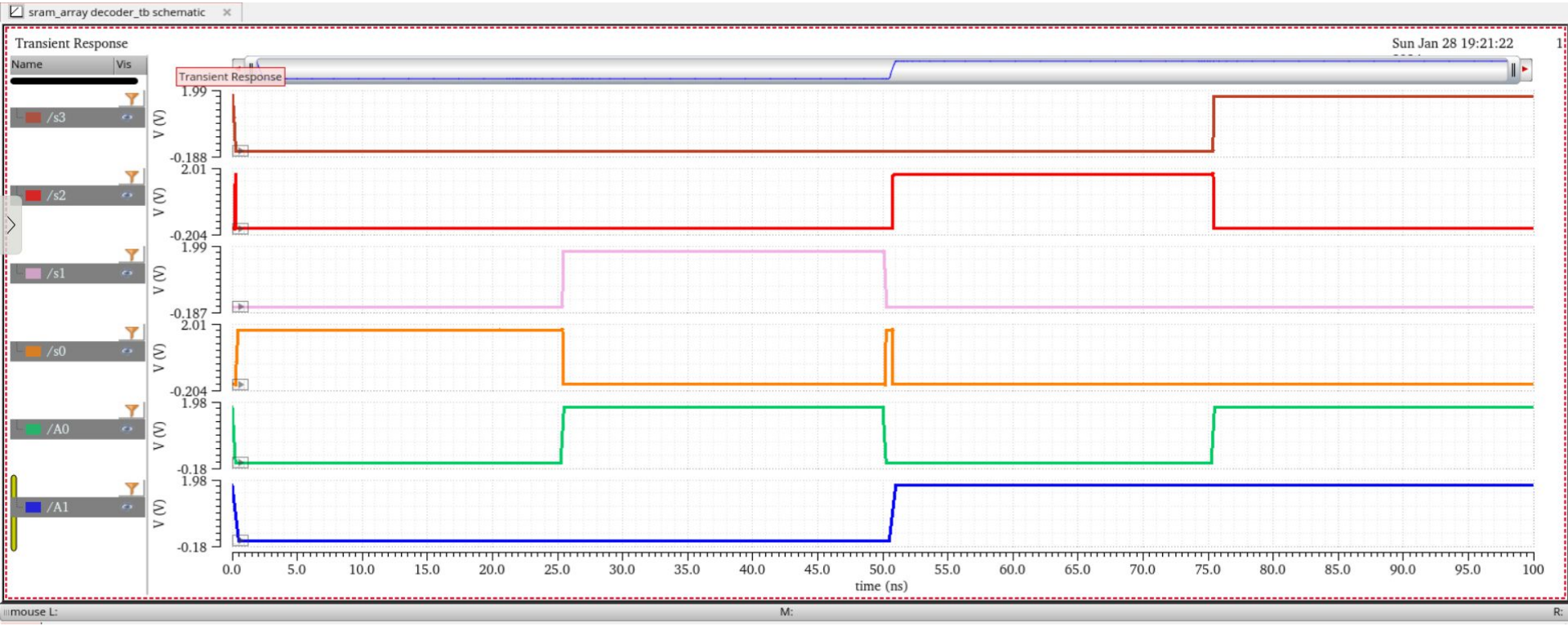



2:4 Decoder schematic

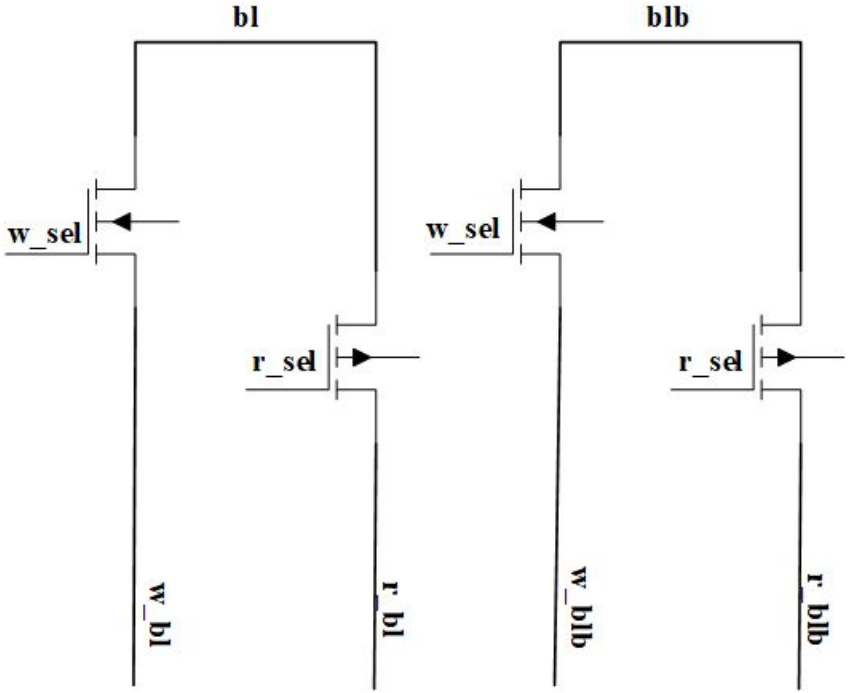



2:4 Decoder symbol

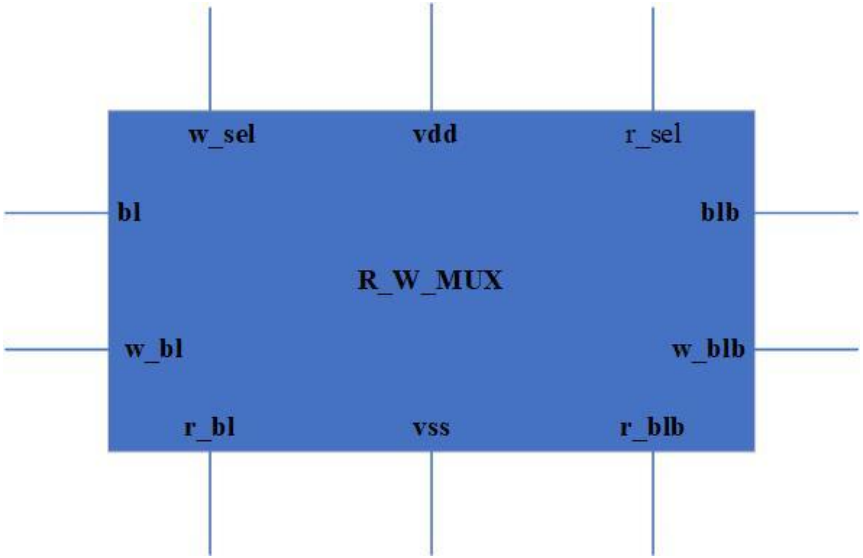
# • 2:4 decoder operation



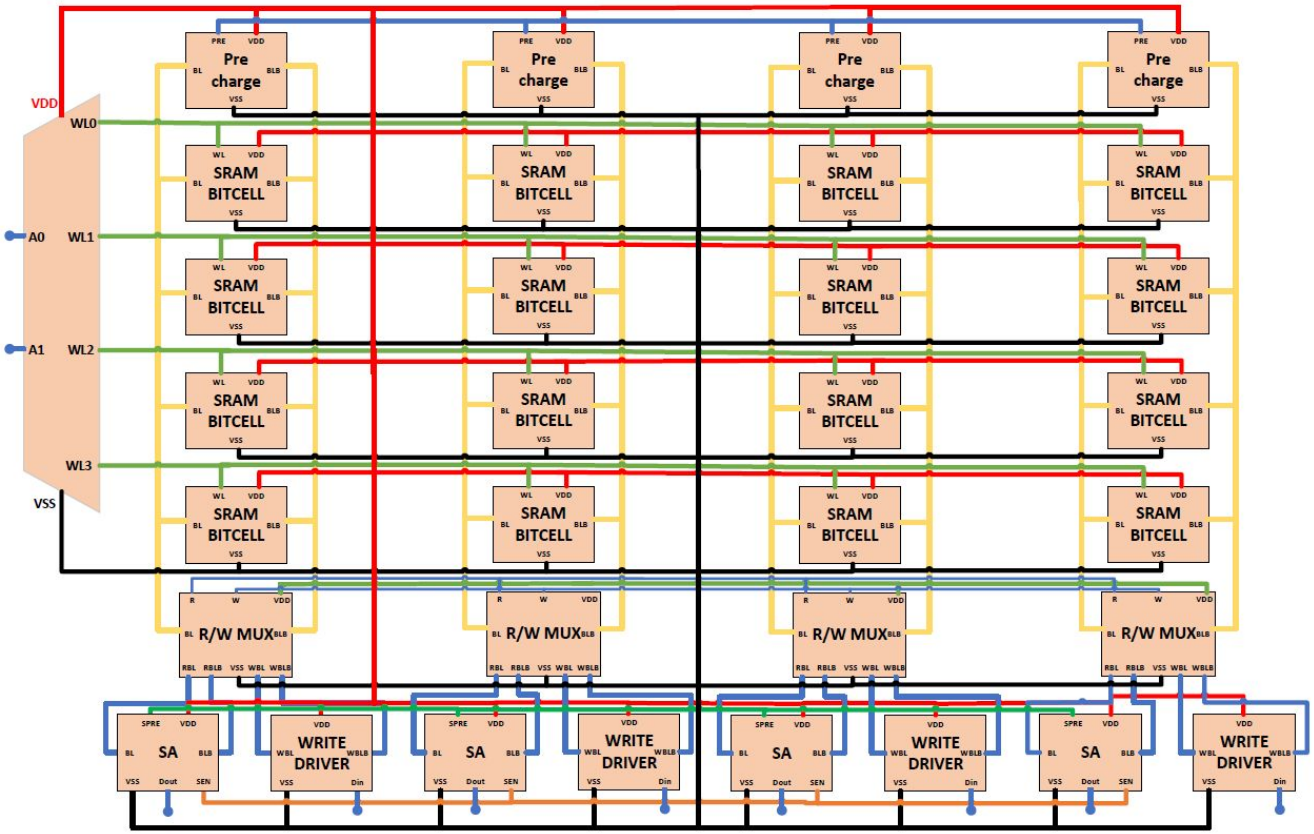

2:4 Decoder operation




Column mux schematic

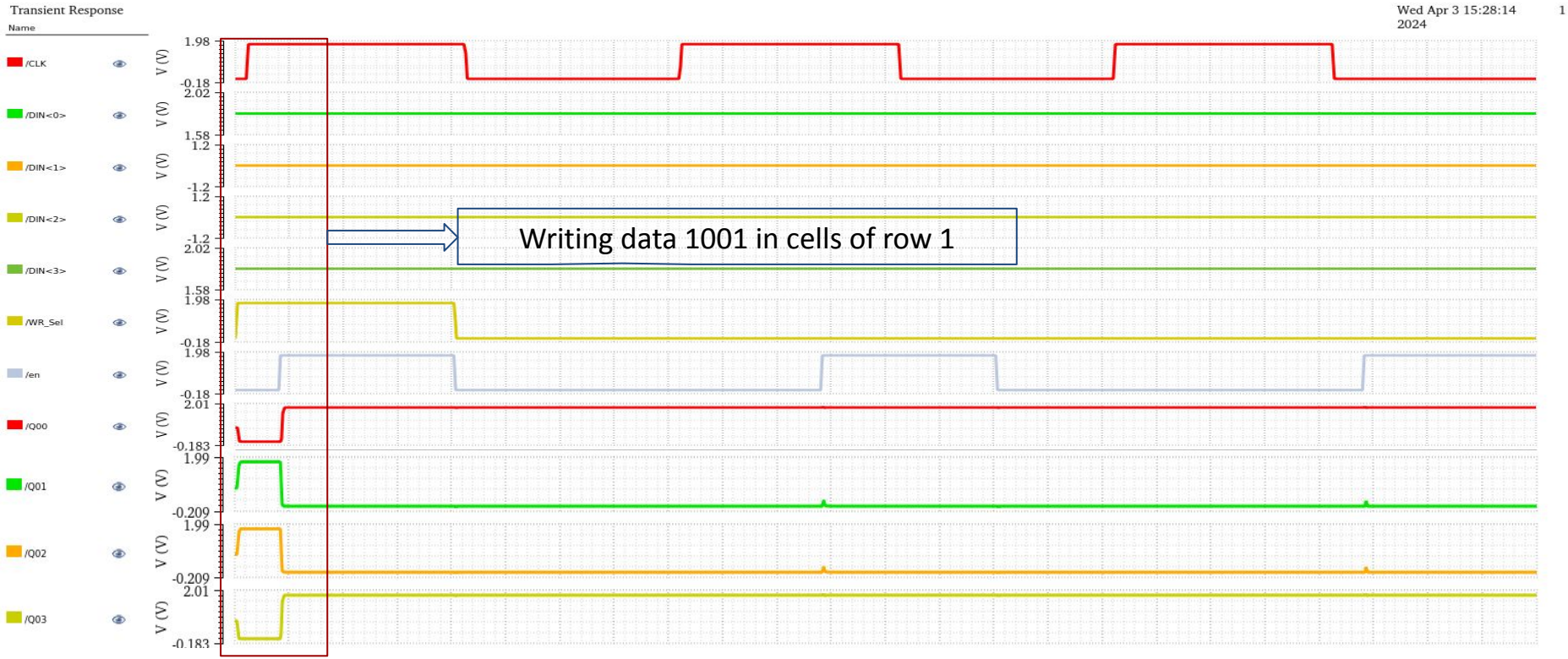


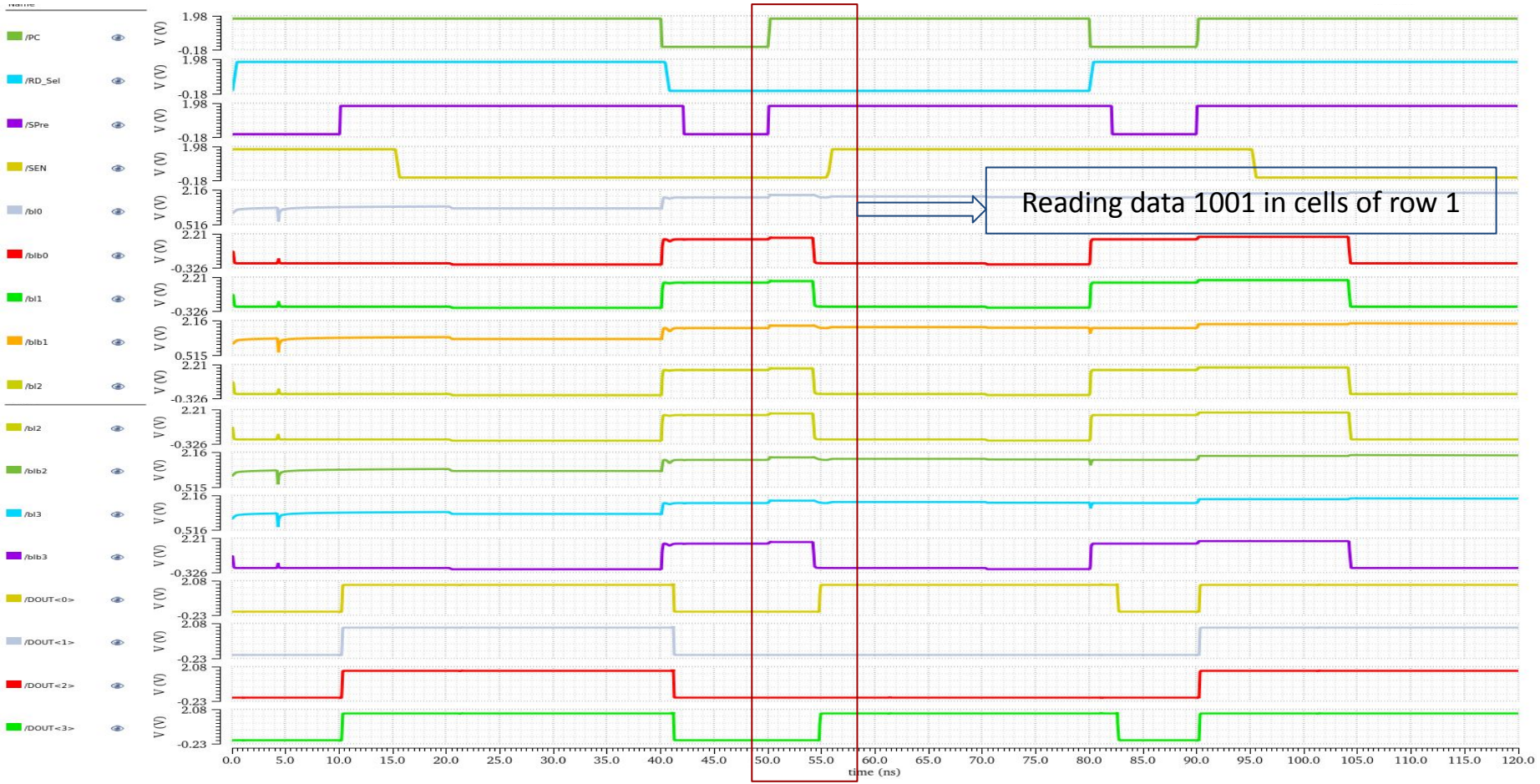

Column mux symbol




4x4 Sram Array schematic in visio

# • 4x4 Sram array operation

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/RD_Sel
/SPre
/SEN
/bl0
/blb0
/bl1
/blb1
/bl2
/bl2
/blb2
/bl3
/blb3
/DOUT<0>
/DOUT<1>
/DOUT<2>
/DOUT<3>
V (V)
1.98
-0.18
2.16
0.516
2.21
-0.326
0.515
2.08
-0.23
0.0
5.0
10.0
15.0
20.0
25.0
30.0
35.0
40.0
45.0
50.0
55.0
60.0
65.0
70.0
75.0
80.0
85.0
90.0
95.0
100.0
105.0
110.0
115.0
120.0
time (ns)
Reading data 1001 in cells of row 1

# Thank you