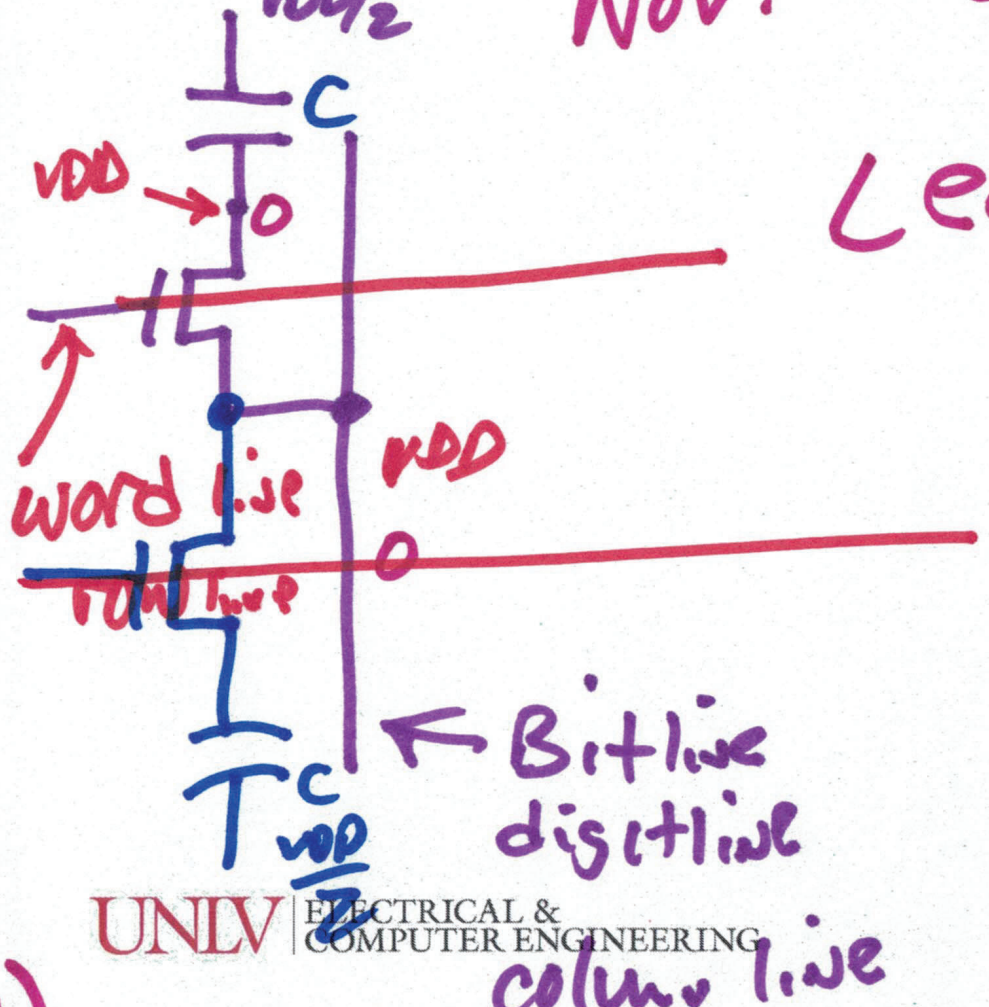
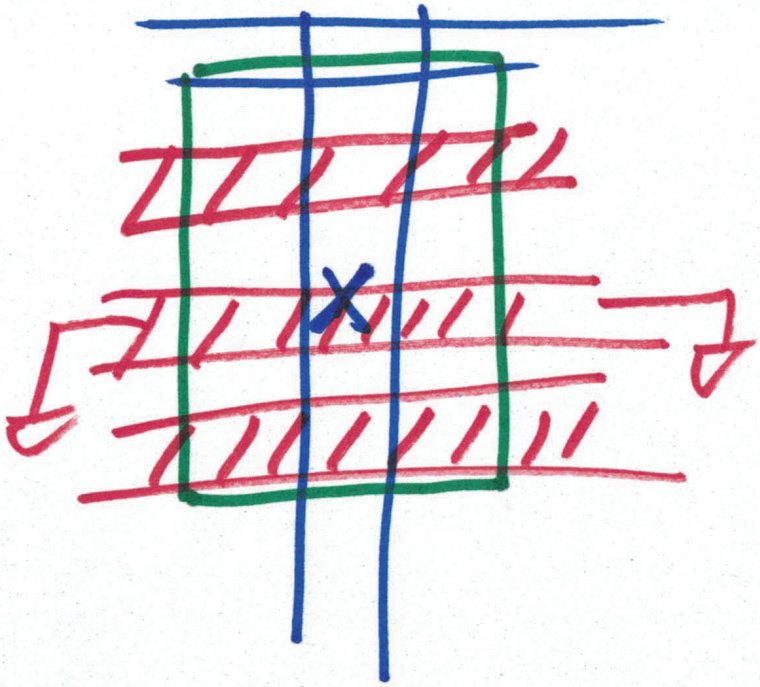
$\frac{\epsilon \cdot A}{t}$ = CEE 421/ELG 621

$Mbit_{cell}$ Digital IC Design

ITIC NOV. 25, 2020

Lecture 25





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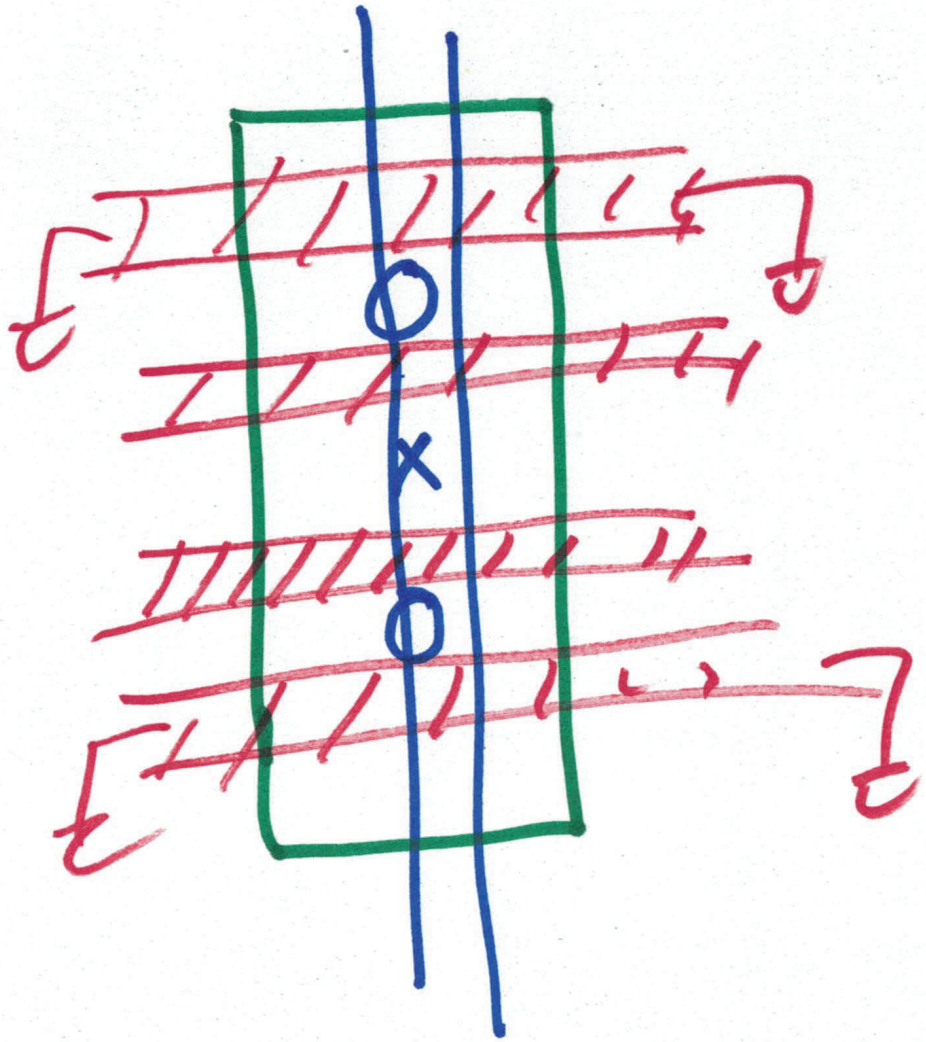
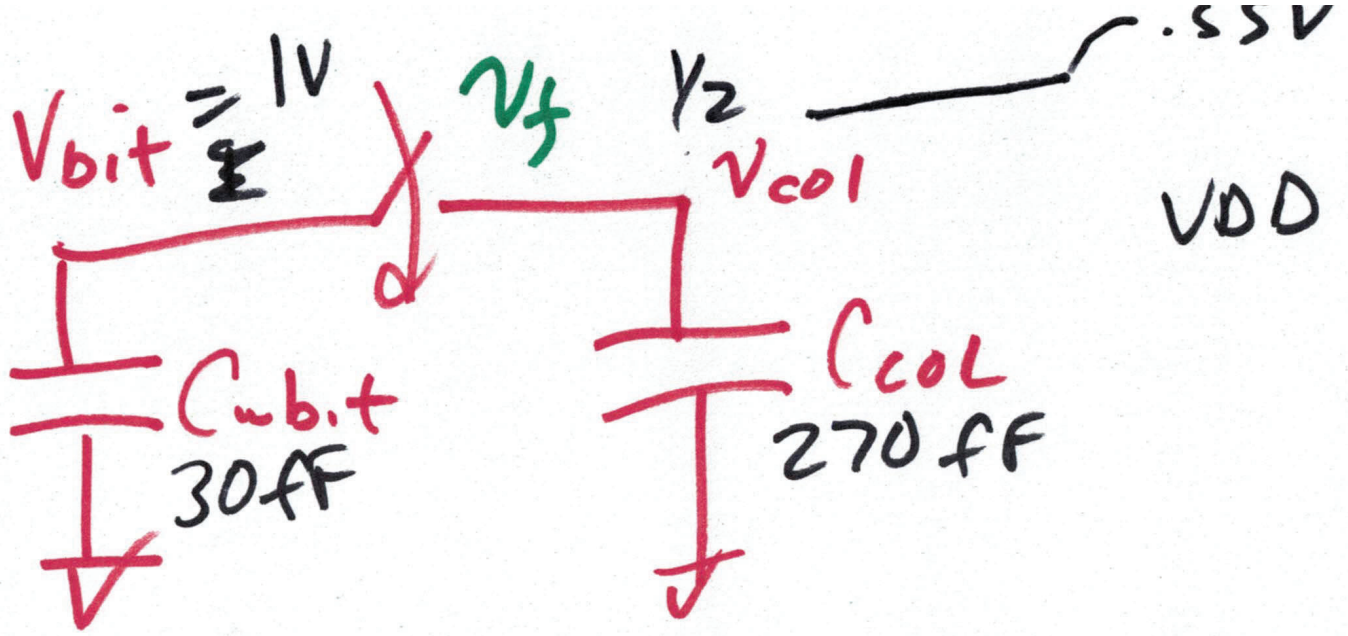
1)



256 x 256

64k bits

4 Gb



VDD = 1

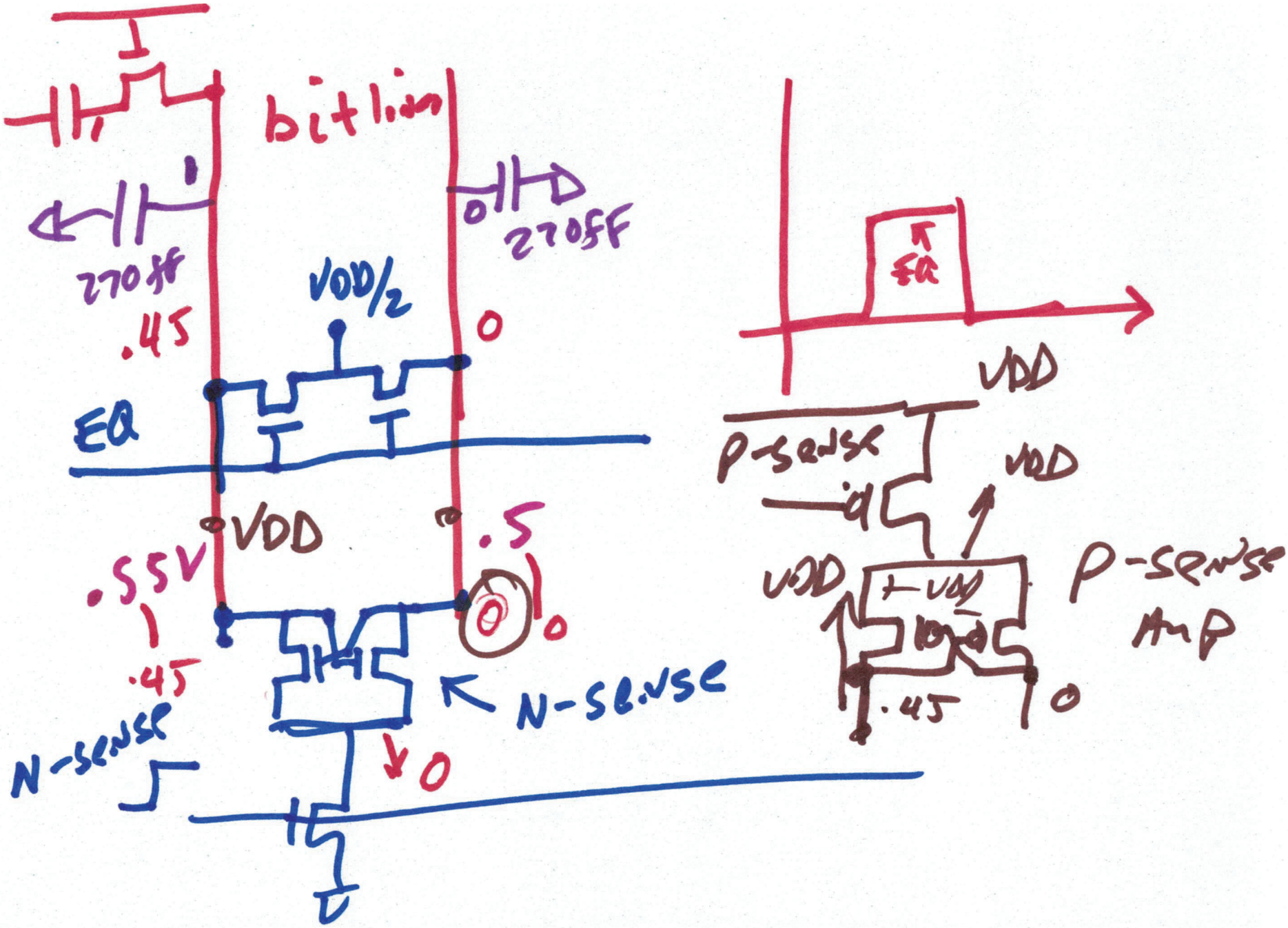
$$V_{bit} \cdot C_{bit} + V_{col} \cdot C_{col} = V_f \cdot (C_{bit} + C_{col})$$

$$V_f = \frac{V_{bit} \cdot C_{bit} + V_{col} \cdot C_{col}}{C_{bit} + C_{COL}}$$

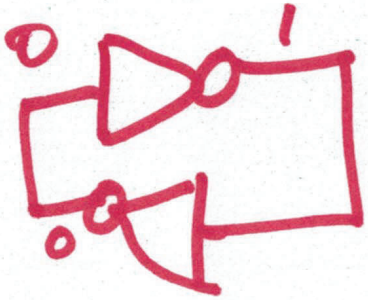
0.55 = 11

$$V_f = \frac{165}{300} = \frac{1 \cdot 30ff + \frac{1}{2} 270ff}{300\ ff}$$

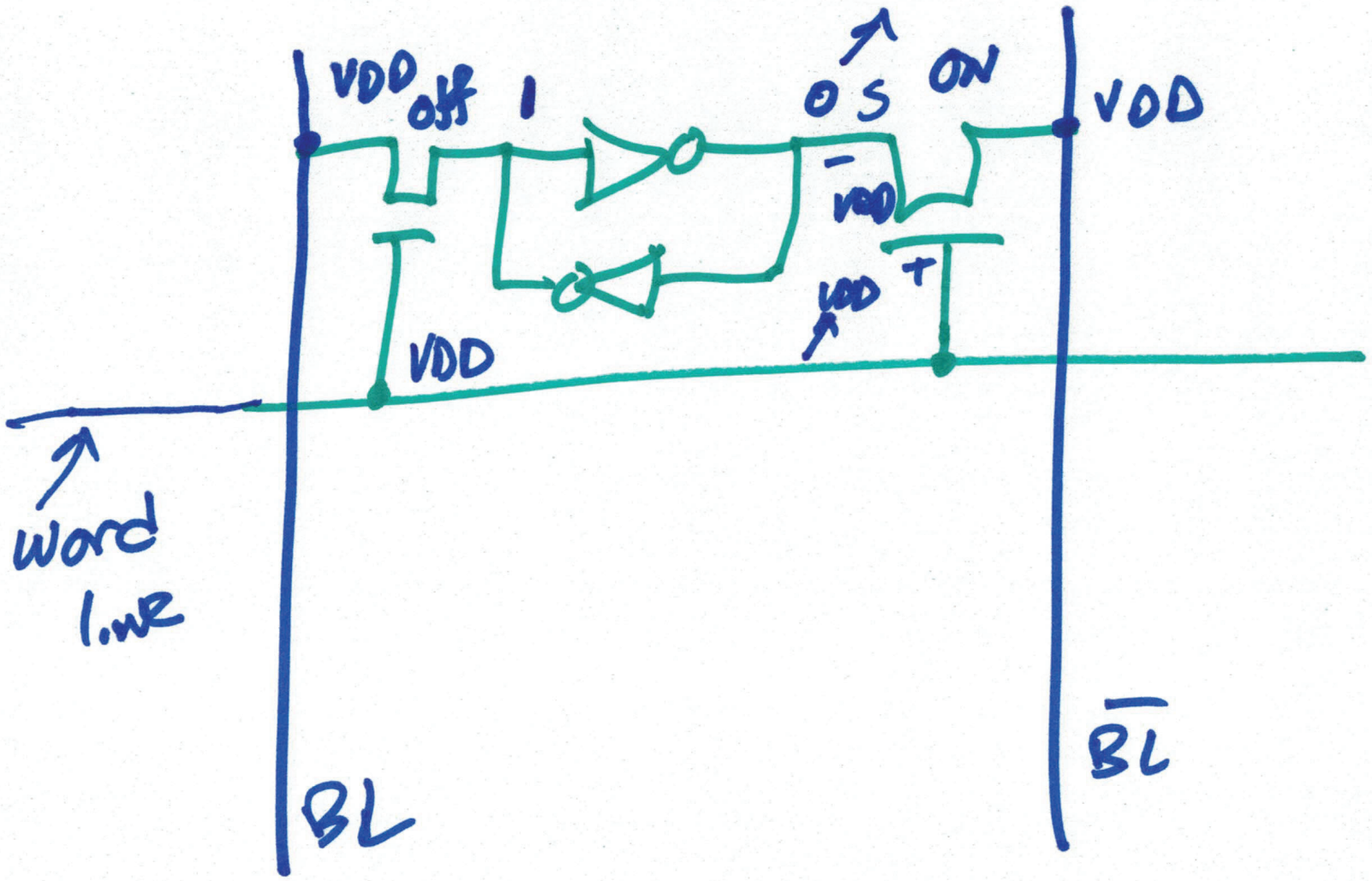
135


bitline
270ff
.45
1
270ff
0
VDD/2
0
EQ
VDD
.5
.55V
1
.45
0
N-sense
N-sense
0
D
EQ
VDD
p-sense
VDD
VDD
VDD
p-sense
Amp
.45
0

SRAM Static RAM



6T SRAM


VDD
off
1
0
S
ON
VDD
VDD
VDD
VDD
T
Word
line
BL
$\overline{BL}$

Chalcogenides