EE 320 Electronics

Lecture 6 2/11/13

2.23 help

$J = 10\ kA/cm^2$

$\rho = 0.02\ \Omega \cdot cm$ N-type

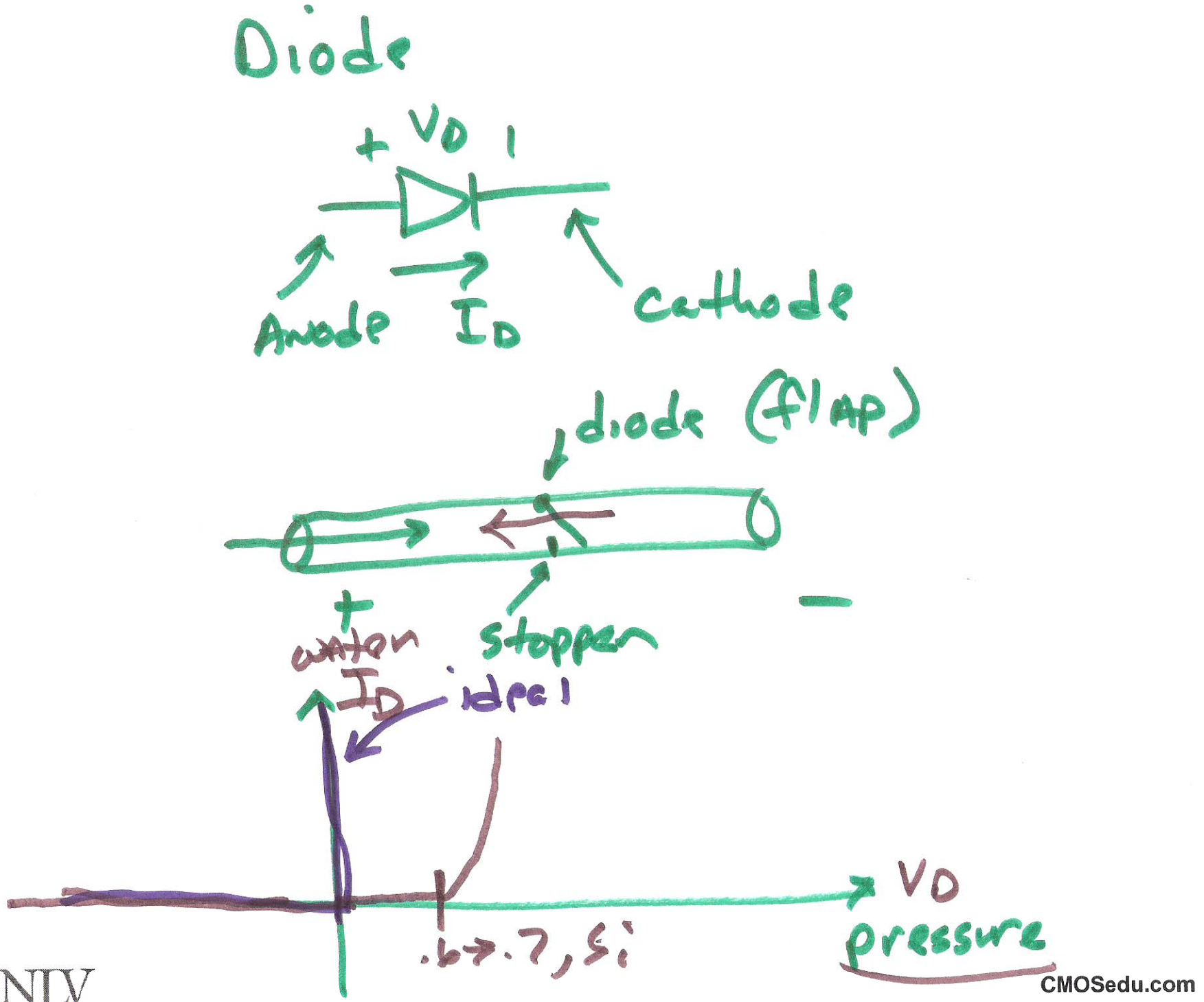
$V = IR$

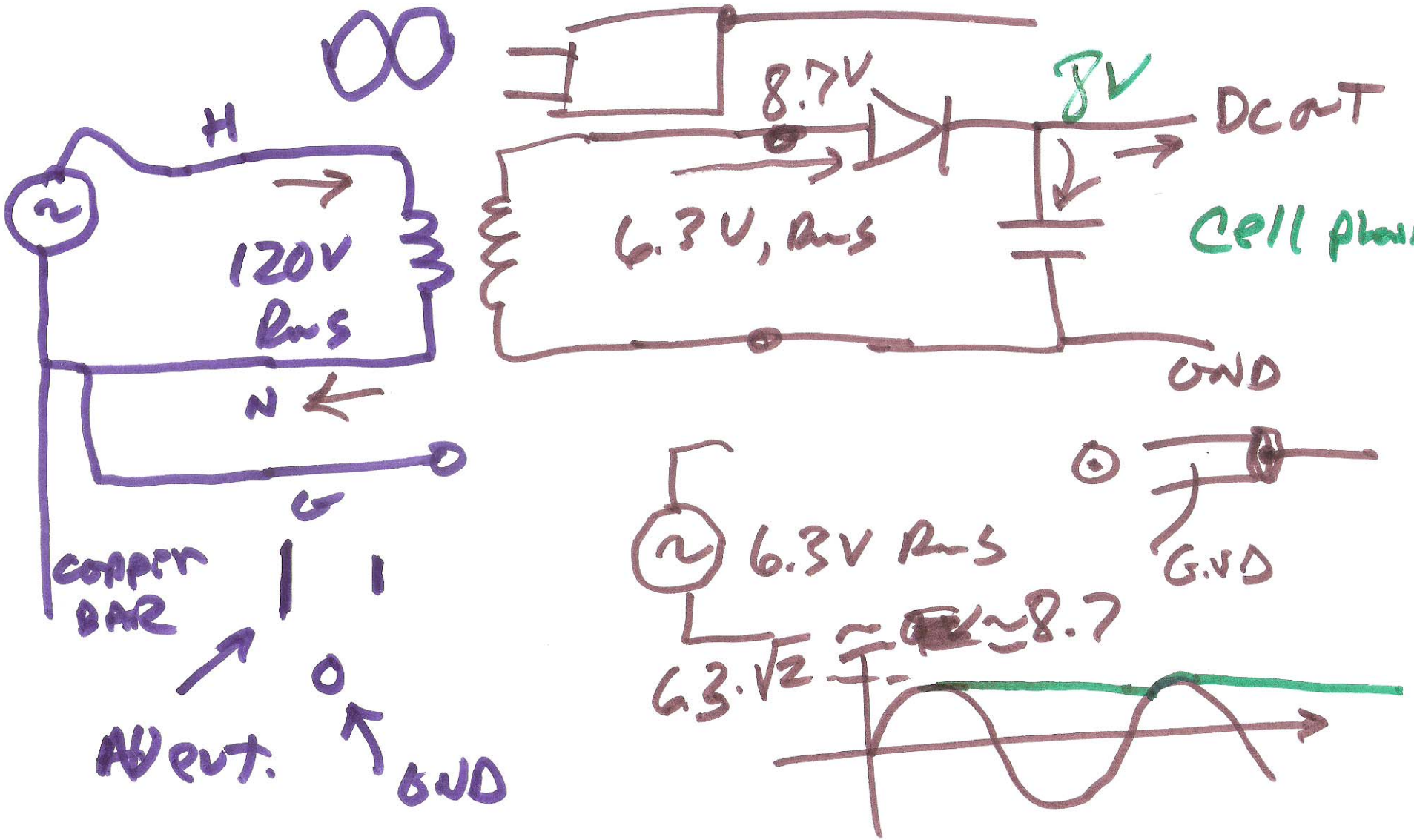
$J \cdot \rho = \mathcal{E}$

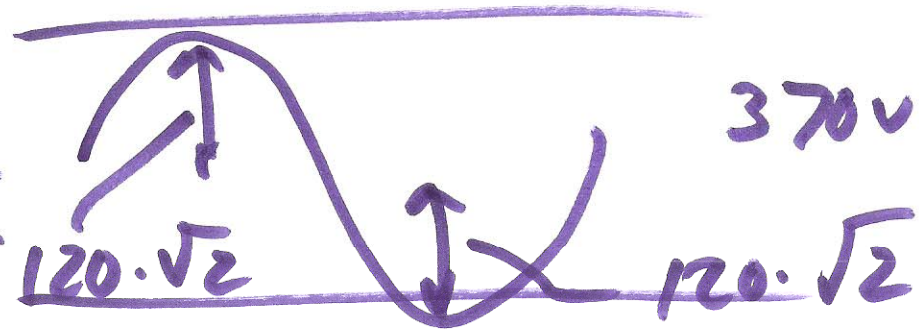
2.18 $\rho = \dfrac{1}{q(\mu_n \cdot N + \mu_p \cdot p)}$

for intrinsic Si:

$\rho \approx 10^{3}\ \Omega \cdot cm$ $N = p = n_i$

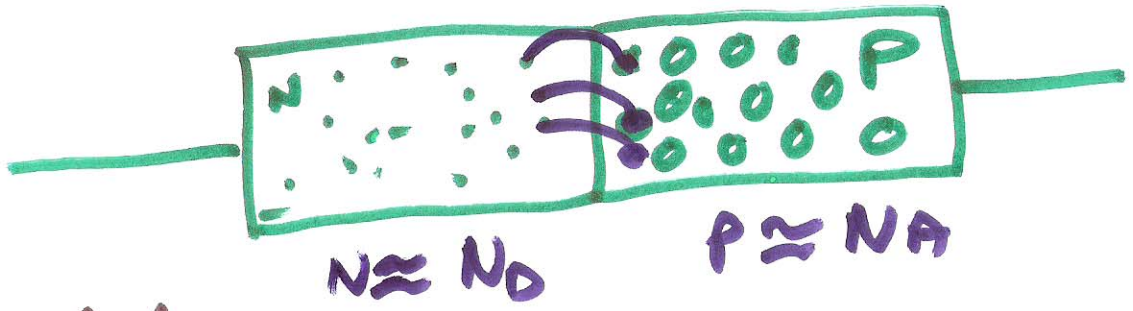

Diode
+ VD -
Anode
ID
cathode
diode (flap)
water
stopper
ID
ideal
.6→.7, Si
VD
pressure





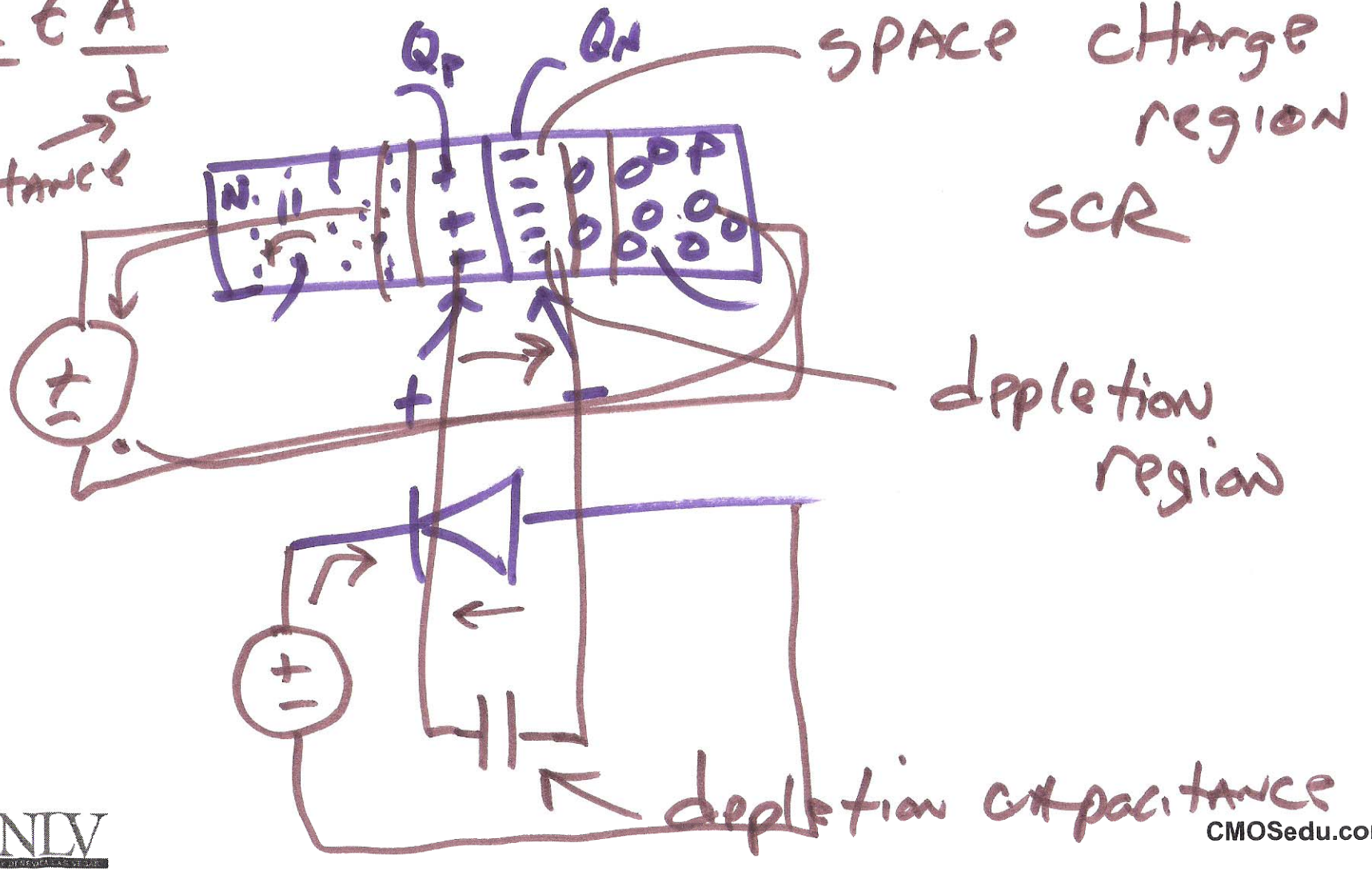
370V p-p ?

3)



$C = \epsilon \frac{A}{d}$

distance



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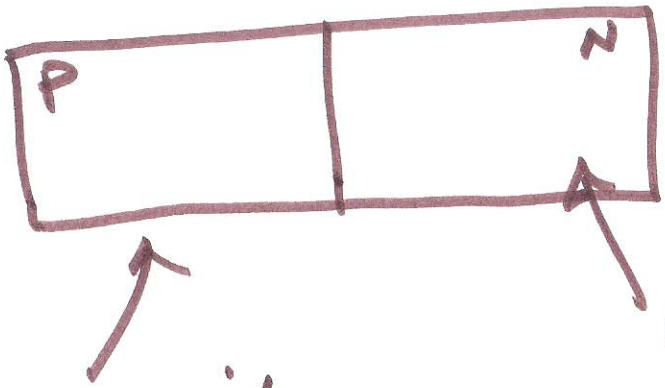


MAjority CARRIER is hole

Minority CARRIER is electron

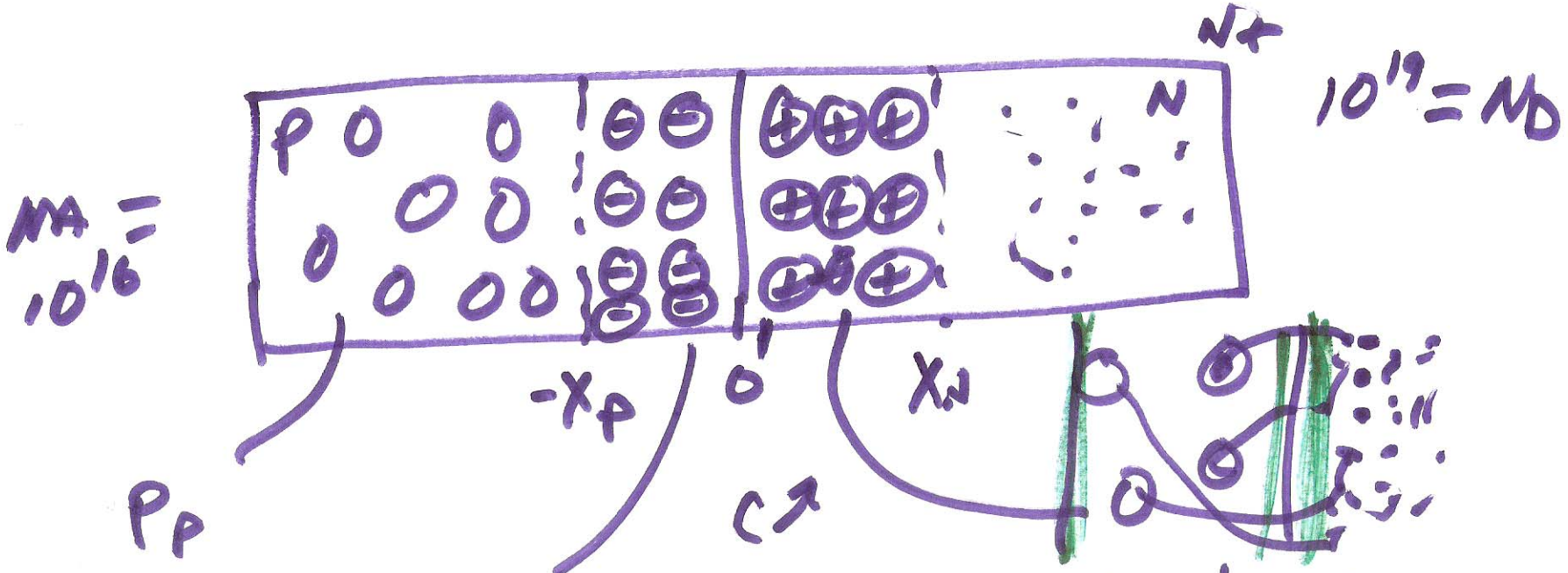
Majority CARRIER is electron, Minority is hole

$$P_P = N_A$$

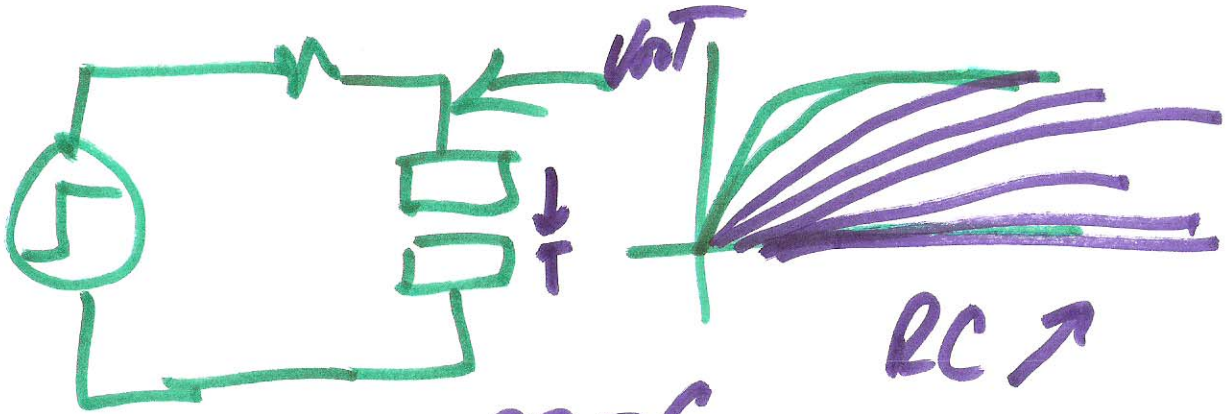
$$N_P = \frac{N_i^2}{N_A}$$

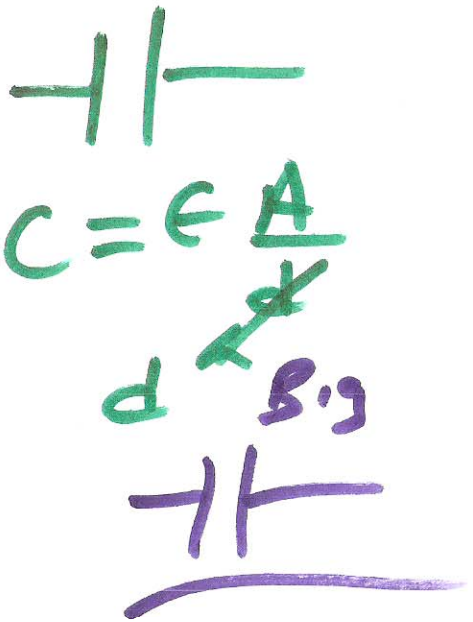
$$P_N = \frac{N_i^2}{N_D}$$

$$N_N = N_D$$



$$-q|X_P| \cdot N_A = q|X_N| \cdot N_D$$





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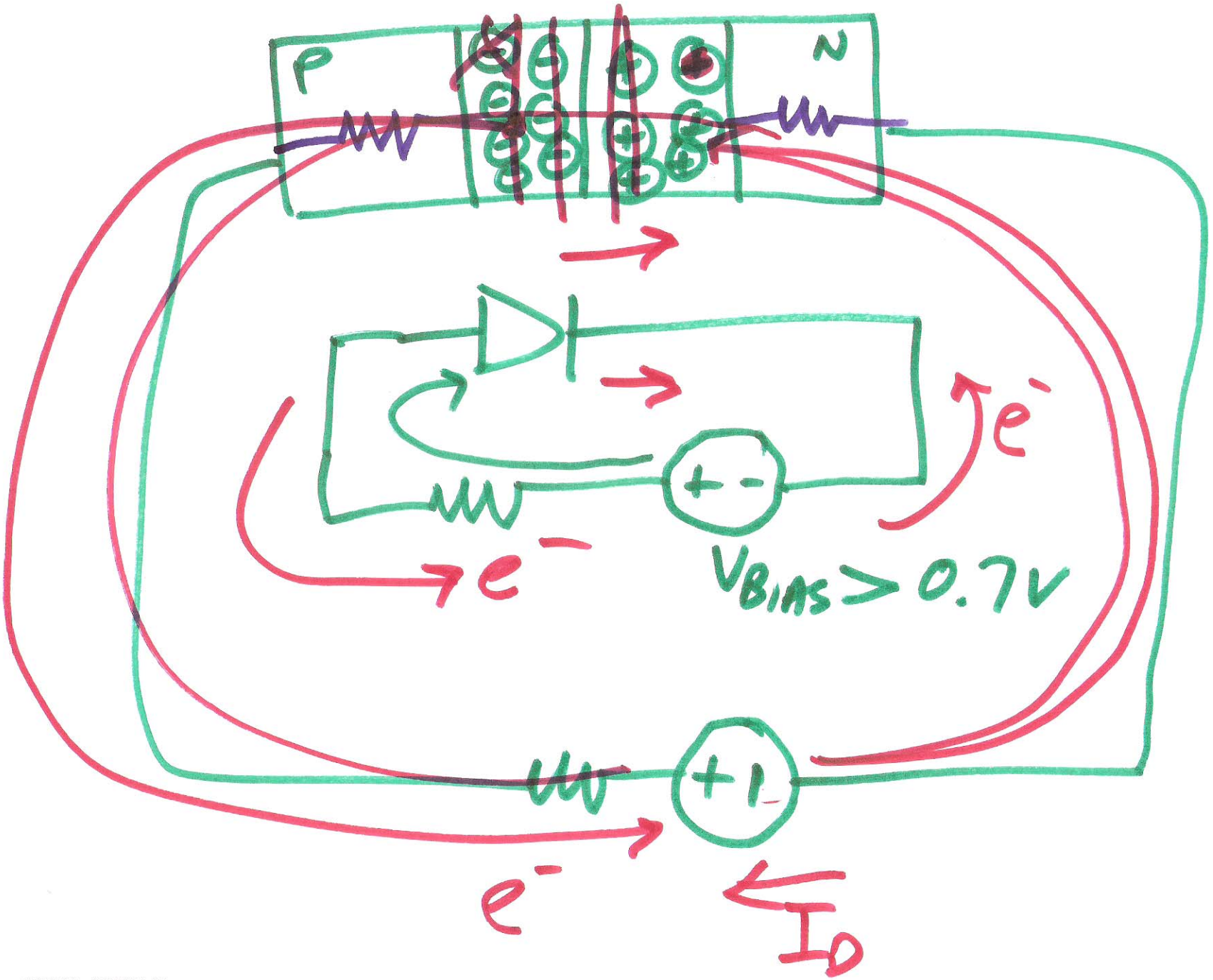

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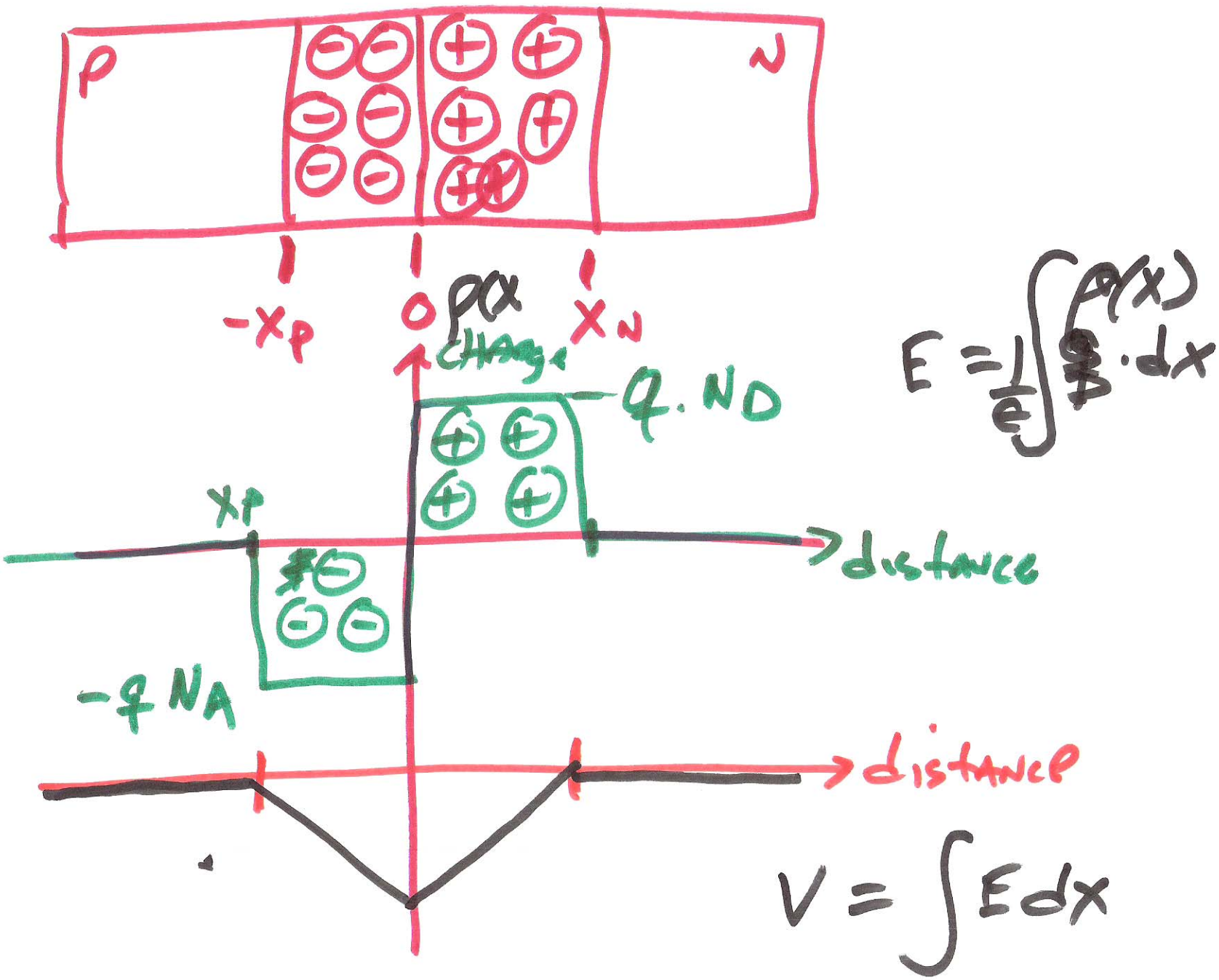
p
n
$-x_p$
0
x_n
pn
charge
$q \cdot N_D$
x_p
distance
$-q N_A$
distance
$E = \frac{1}{\varepsilon}\int \rho(x) \cdot dx$
$V = \int E dx$