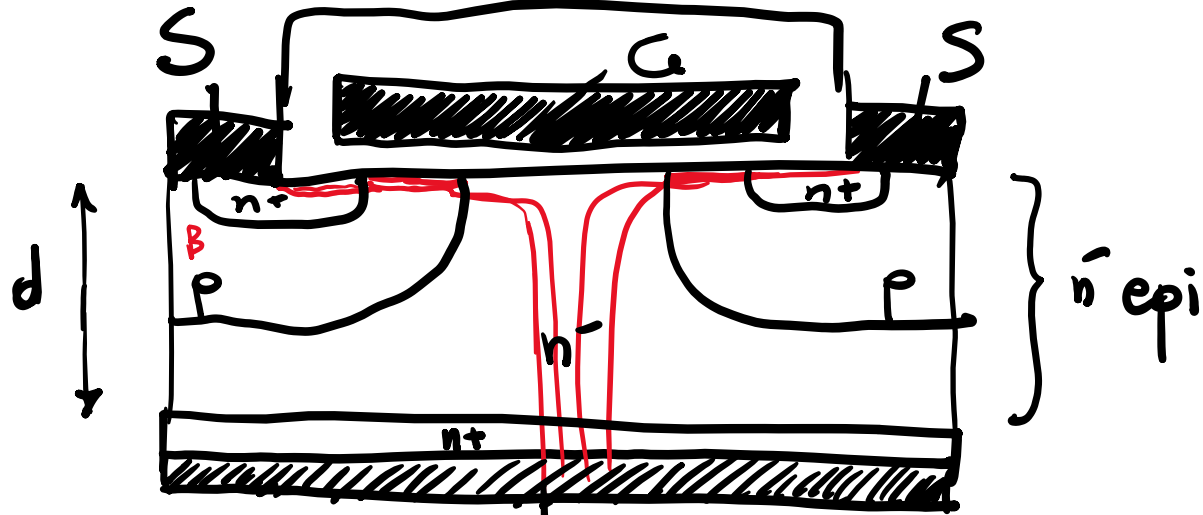
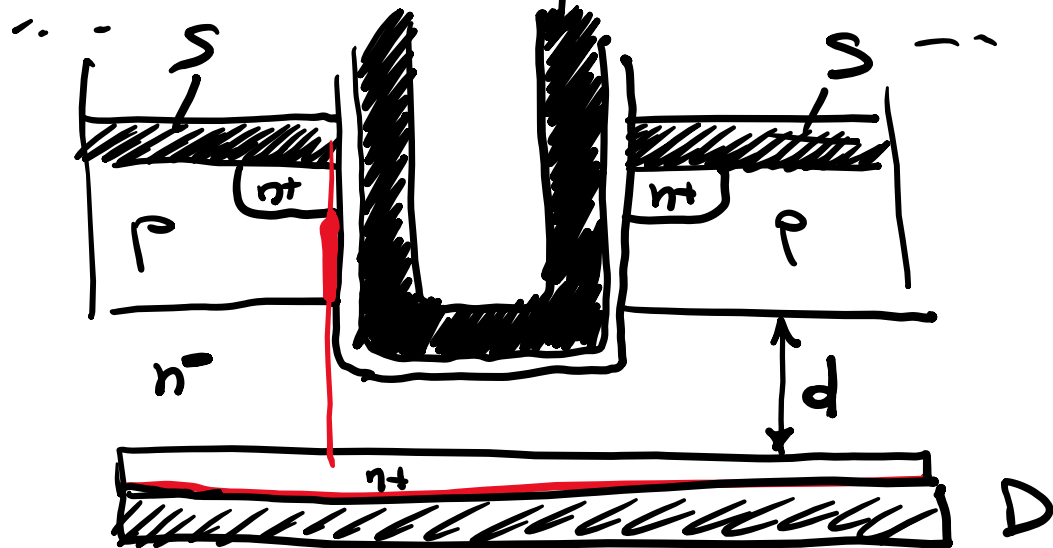


MOSFET DI POTENZA



U-MOSFET



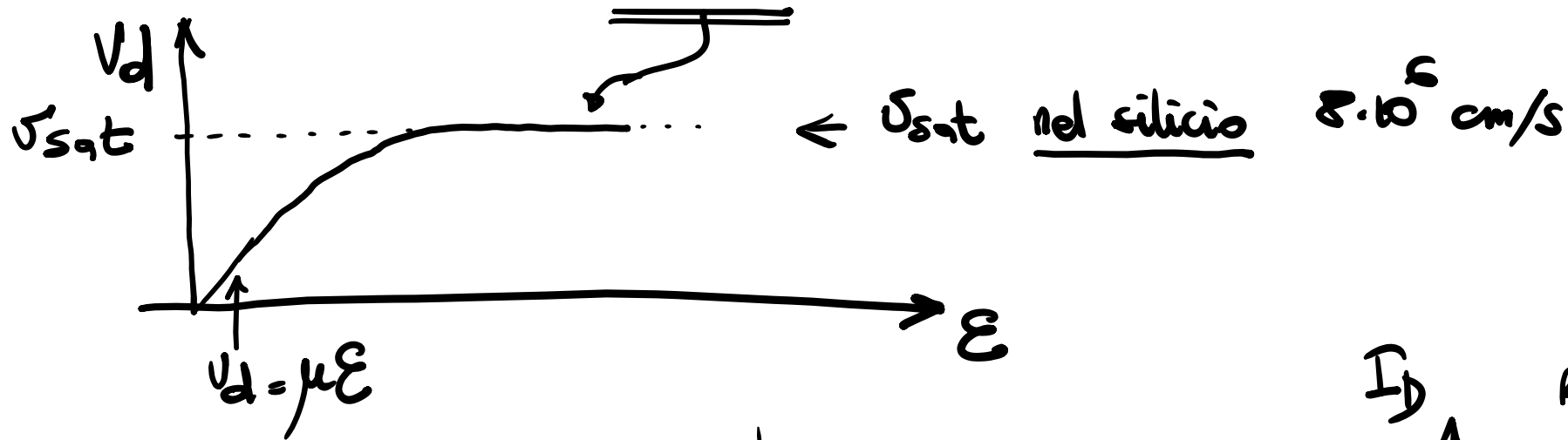
80'

Vertical Double Diffusion MOSFET

$$V_{BD} \propto d E_{BDmax}$$

- o B e S sono in cc
- o G è sopra la regione n-
 - ↳ in conduzione
 - abbassa la resistività della regione n- in superficie
 - ↳ in interdizione
 - fa da field plate
- o No c'è modulazione della CONDUZIONE

SATURAZIONE DELLA VELOCITÀ



E PICCOLO

$$Q \propto (V_{GS} - V_T)$$

$$v_d = \mu E \approx \mu \frac{(V_{GS} - V_T)}{L}$$

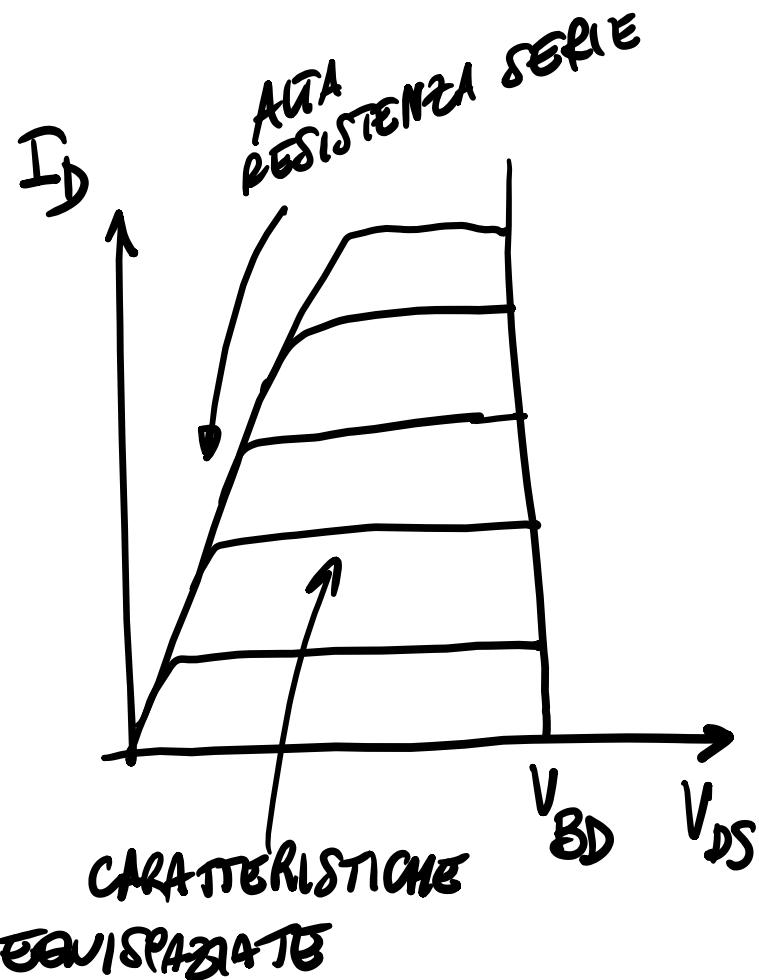
$$I_d \propto Q v_d \propto (V_{GS} - V_T)^2$$

E GRANDE

$$Q \propto (V_{GS} - V_T)$$

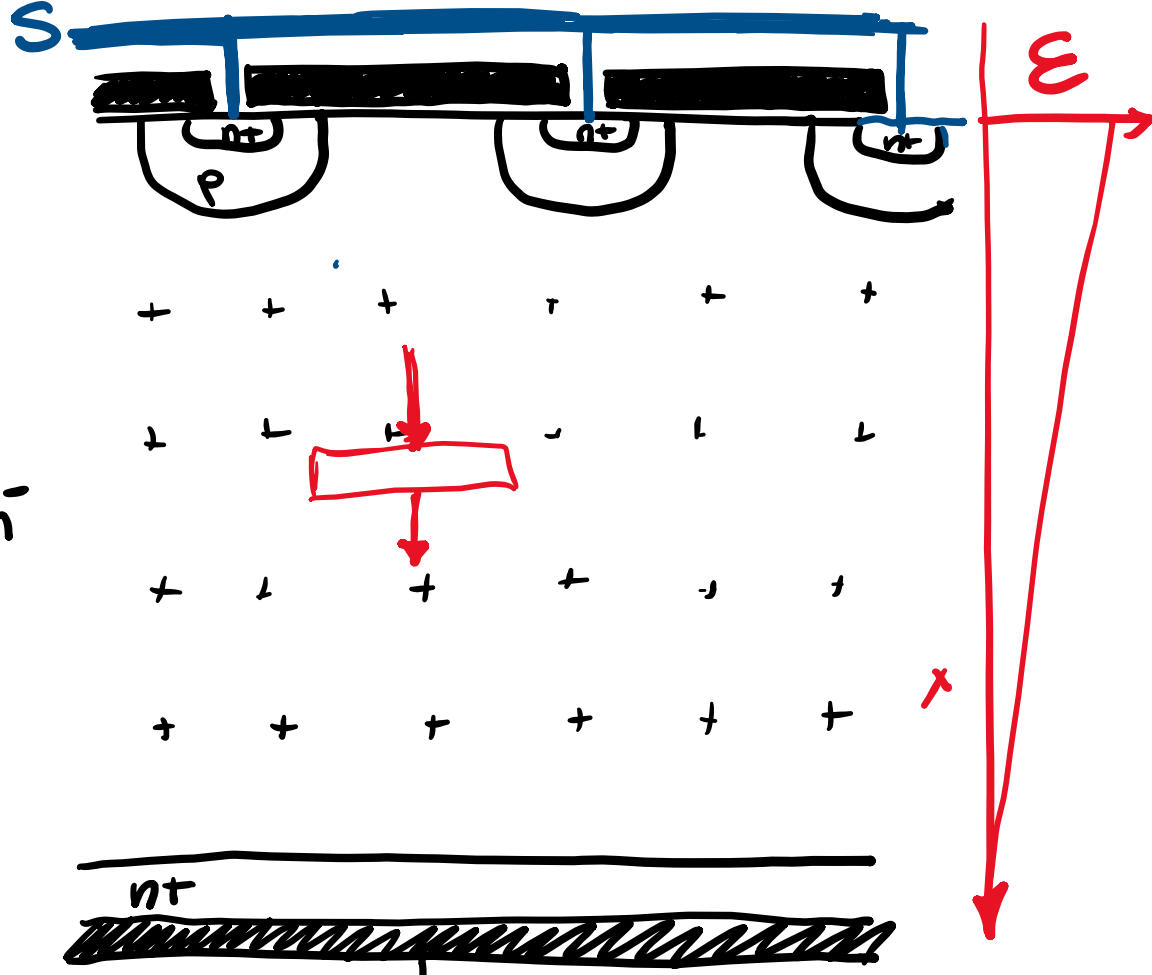
$$v_d = v_{sat}$$

$$I_d \propto Q v_d \propto (V_{GS} - V_T)$$

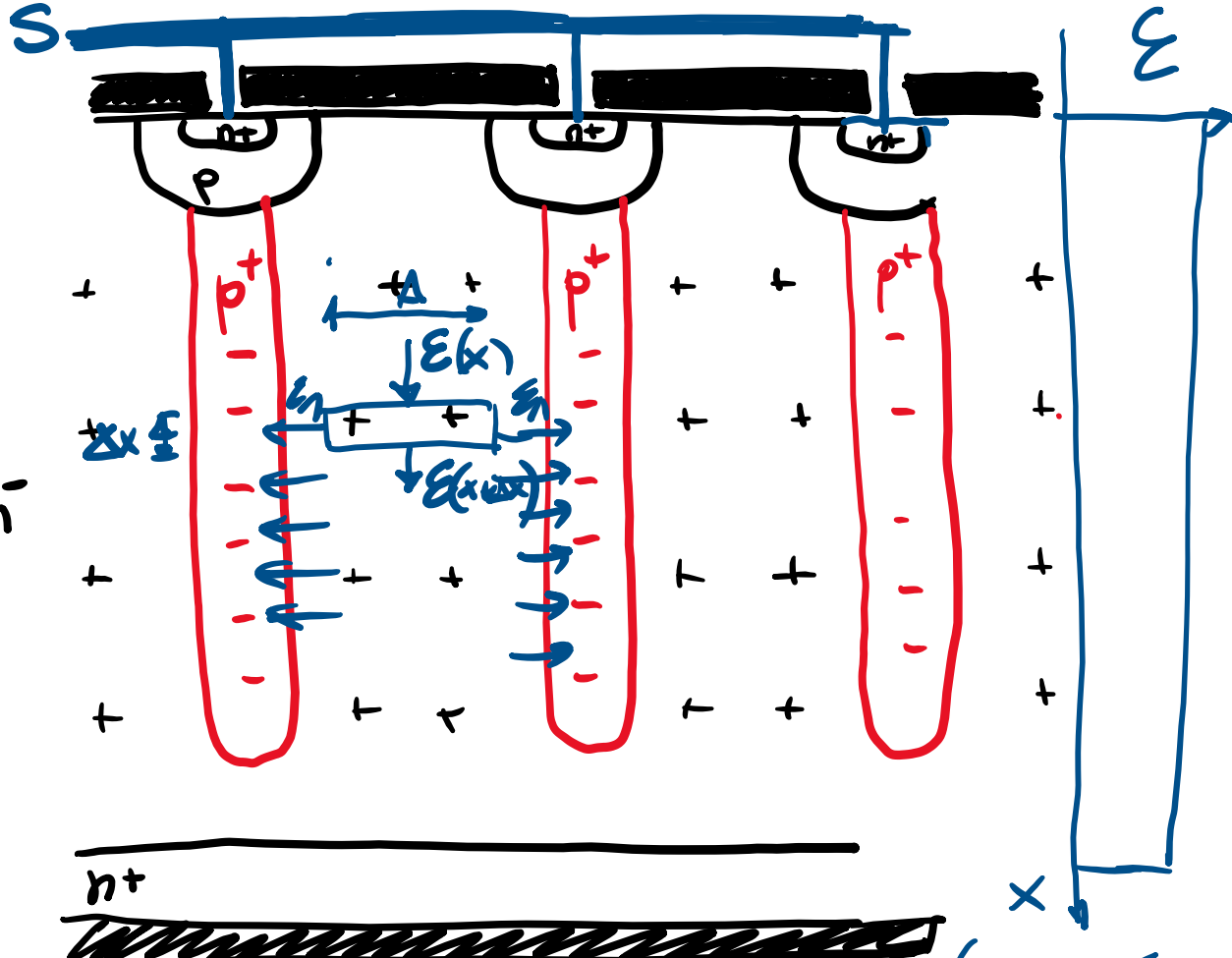


MOSFET A SUPERGIUNZIONE

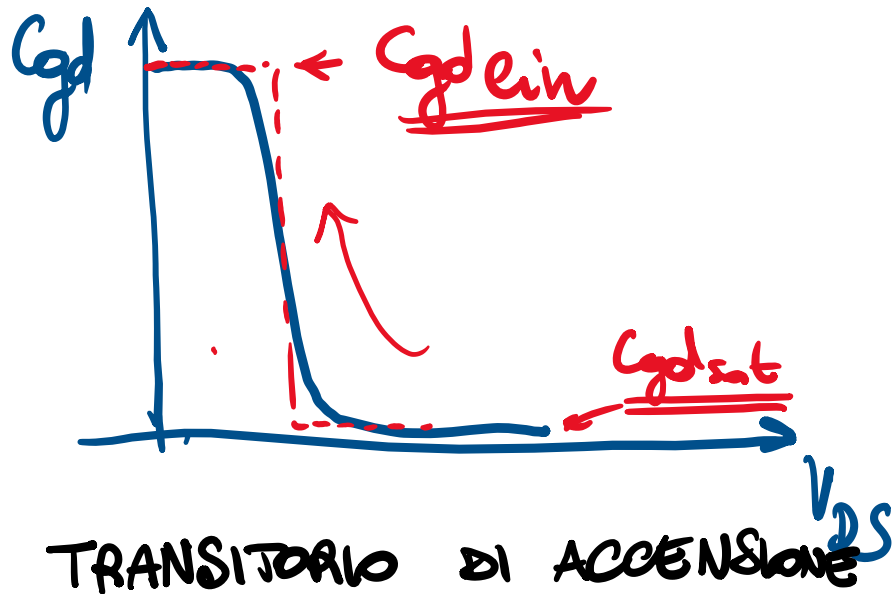
DD



SUPERJUNCTION

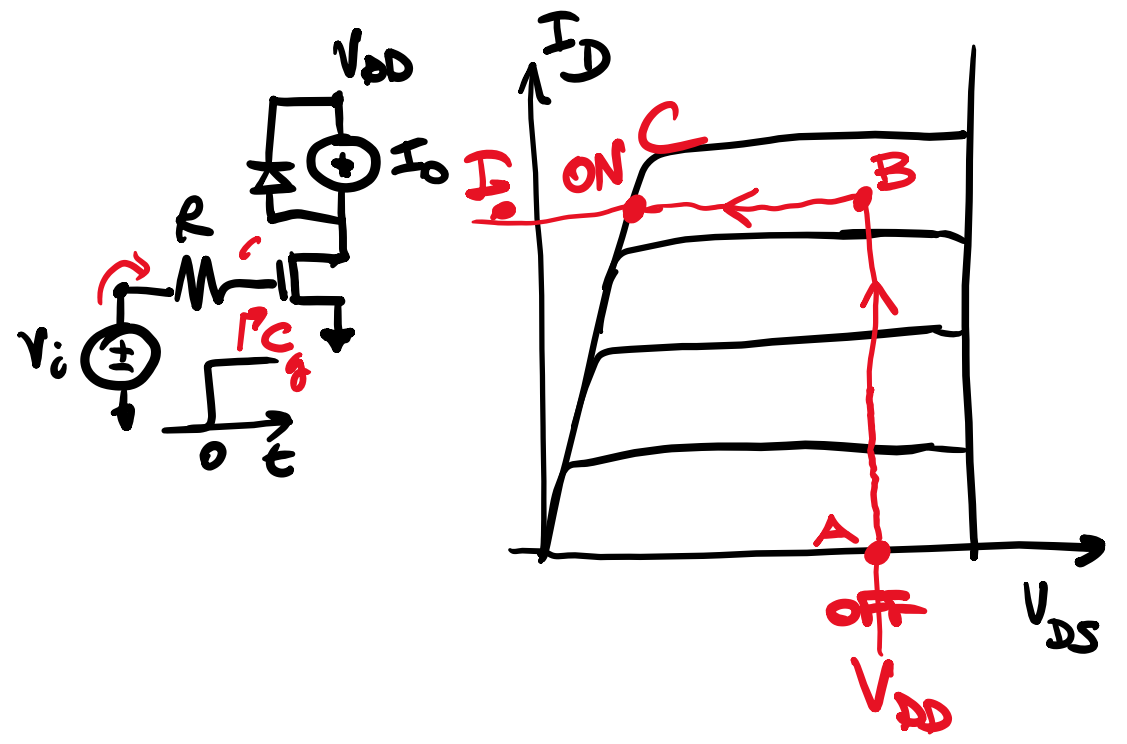
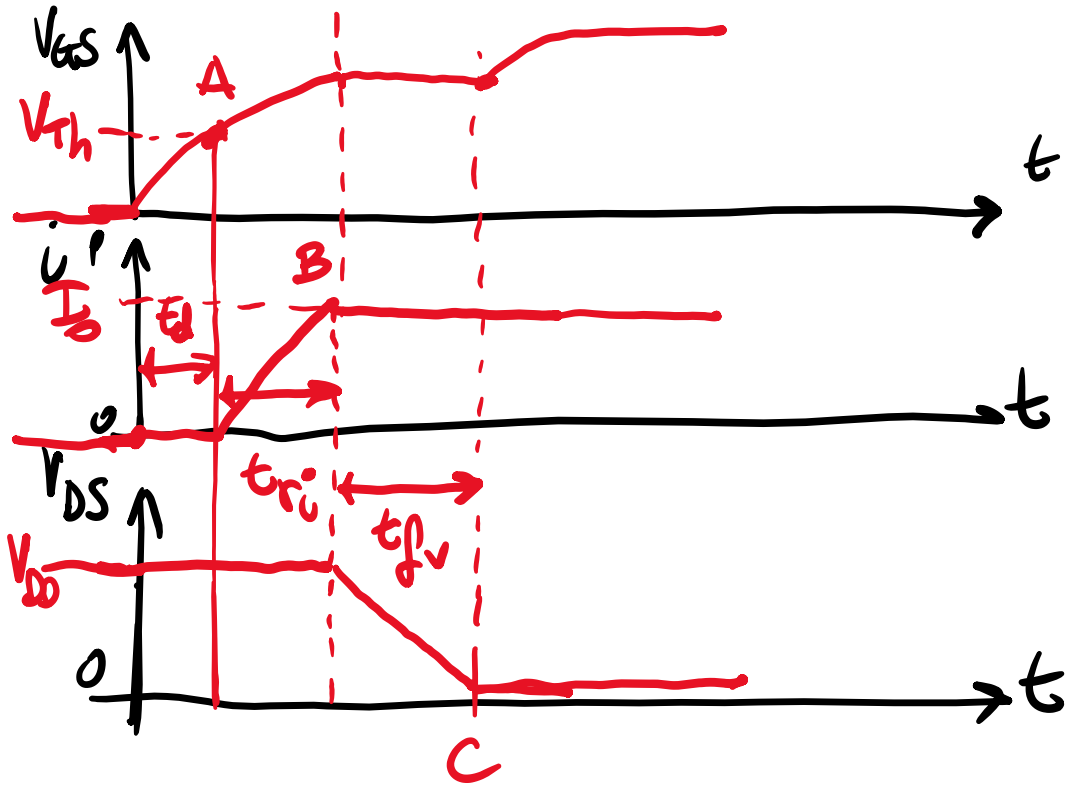


$$\frac{qN_d A \Delta x}{\epsilon_0 \epsilon_r} = \underbrace{E(x+\Delta x)A - E(x)A + E_1 A_1}_{D} \Rightarrow \frac{dE}{dx} A = \frac{qN_d A}{\epsilon_0 \epsilon_r} - \frac{E_1 A}{\Delta x}$$

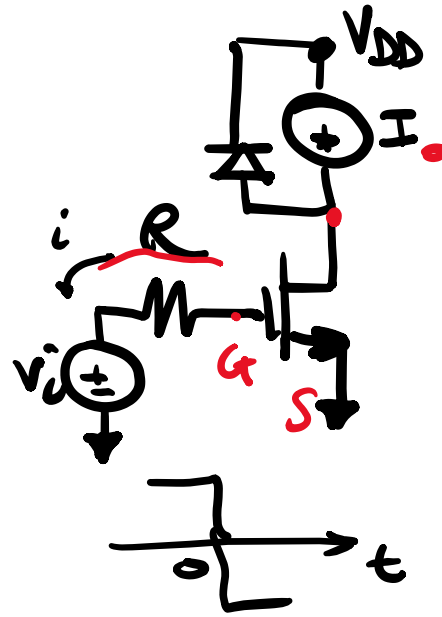
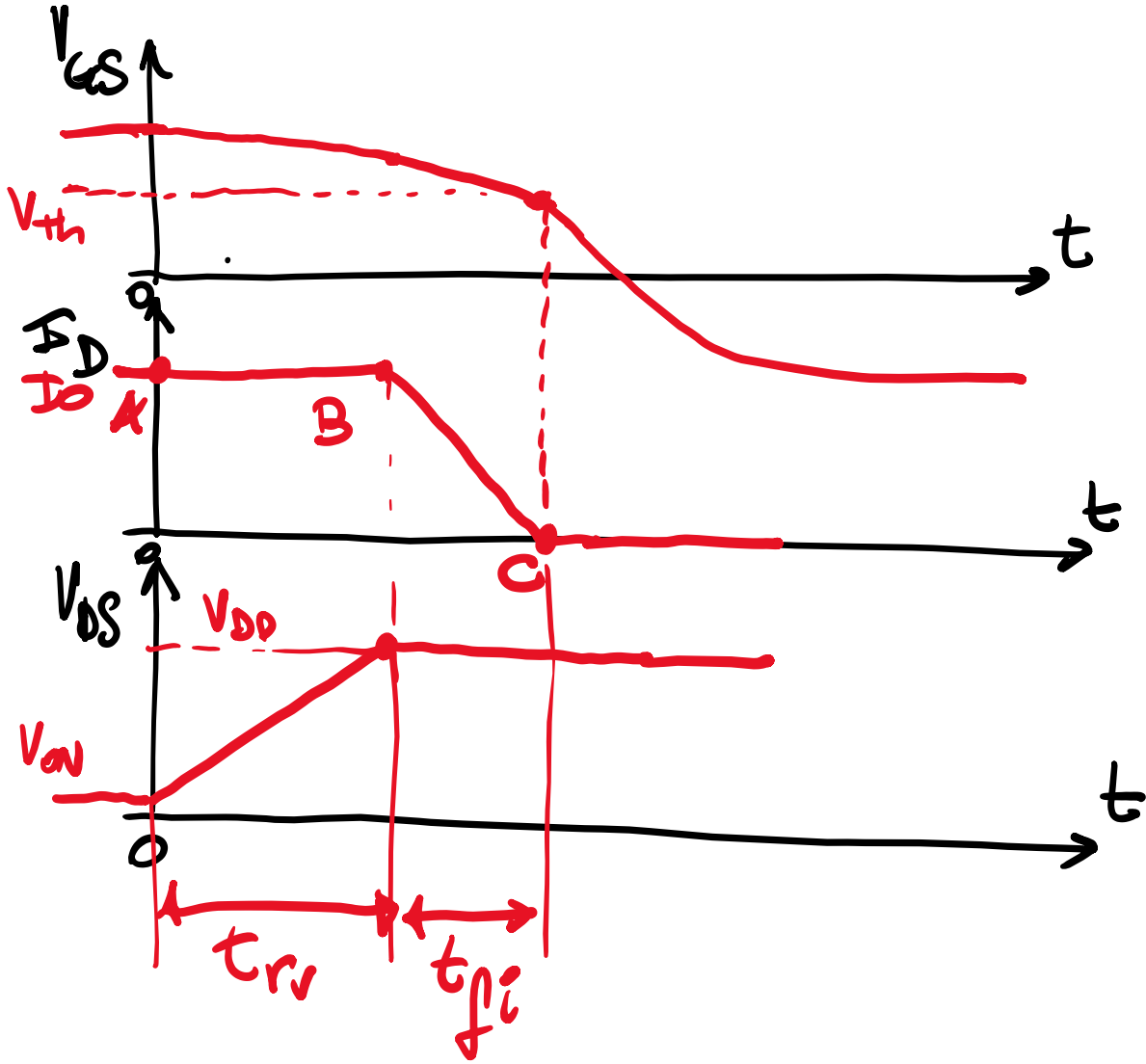


$$i = \frac{dQ}{dt} = \frac{d(CV)}{dt} = C \frac{dV}{dt} + V \frac{dC}{dt}$$

TRANSITORIO DI ACCENSIONE



TRANSITORIO DI SPEGNIMENTO



$$i = \frac{d(CV)}{dt} = \frac{dC}{dt} V + C \frac{dV}{dt}$$

