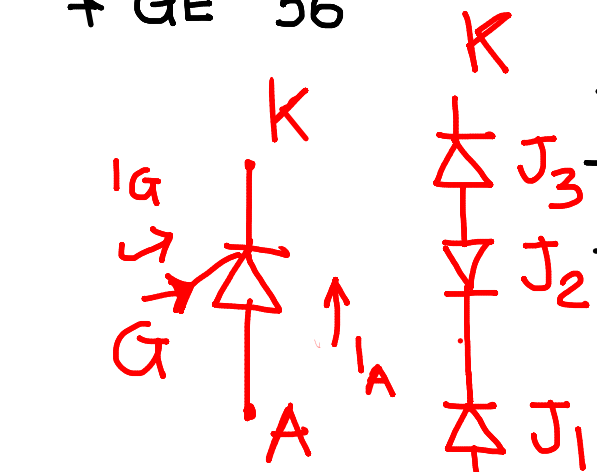
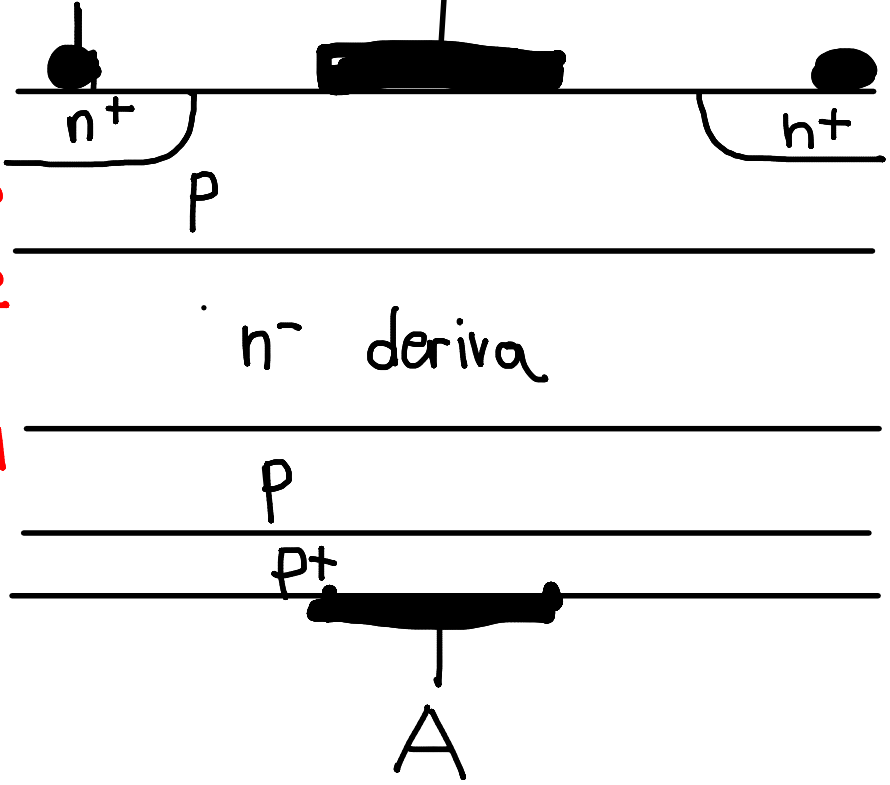
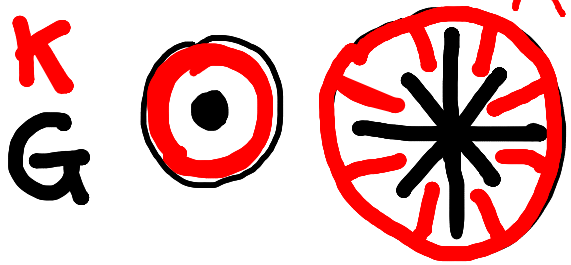
TIRISTORI

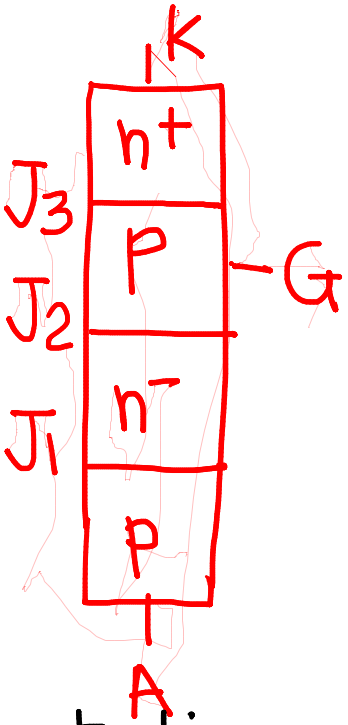
SCR - Silicon Controlled Rectifier

+ GE 56



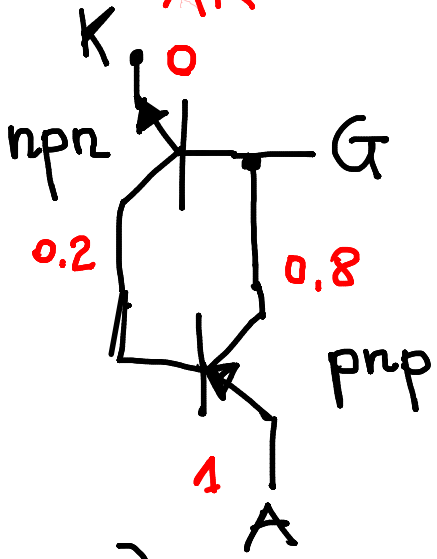






$V_{AK} > 0$

$V_{AK} < 0$



J_2 sopporta la V

J_1 = =

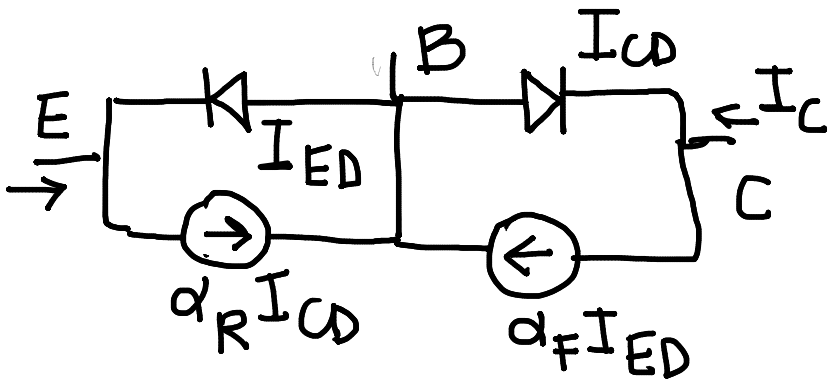
$\alpha_{npn} \lesssim 1 \; (0,9)$

$\alpha_{pnp} < 0,1$

2 stati

OFF (blocco)

ON i2 BJT in sat.



Modello di Ebers-Moll

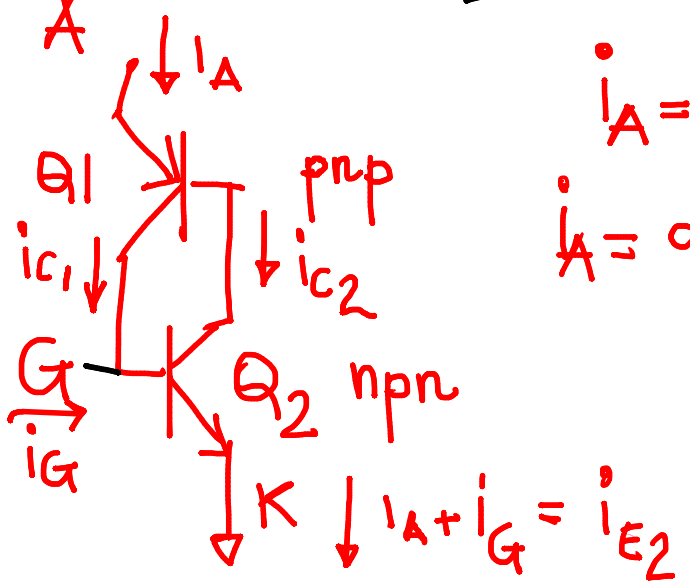
2.a.d

$$I_{CD} = -I_{CS}$$

$$I_E = -I_{ED} - \alpha_R I_{CS}$$

$$I_C = \alpha_F I_{ED} + I_{CS} = -\alpha_F I_E + I_{CO}$$

$$\left[I_{CO} = \left(1 - \alpha_R \alpha_F\right) I_{CS} \right]$$

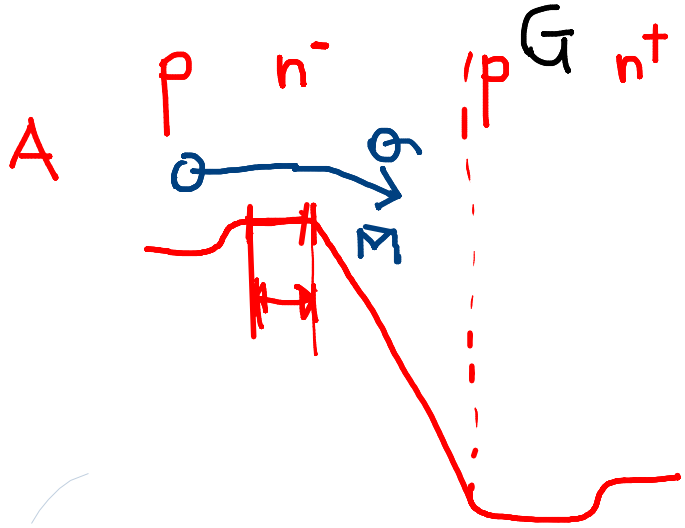


$$i_A = i_{C_1} + i_{C_2} = i_{E_1}$$

$$i_A = \alpha_{pnp} i_{E_1} - I_{CO_1} + \alpha_{npn}\left(i_A + i_G\right) + I_{CO_2}$$

($i_{E_1} = i_A$)

$$i_A = \frac{+\alpha_{npn} i_G - I_{CO_1} + I_{CO_2}}{\left(1 - \alpha_{pnp} - \alpha_{npn}\right)}$$



Potenziale

Se Aumenta V_{AK} 1) si può avere un inizio di moltiplicazione che aumenta α_{pnp} →

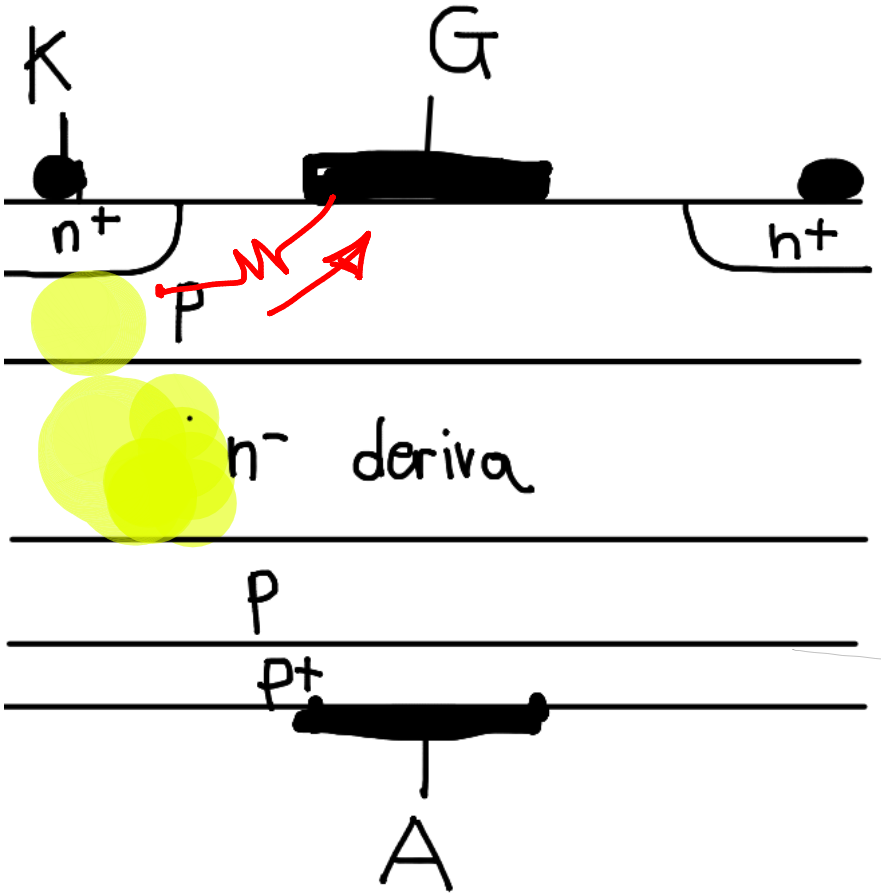
2) aumenta lo svuotamento della regione di deriva, → si stringe la base del pnp → ↑ α_{pnp}

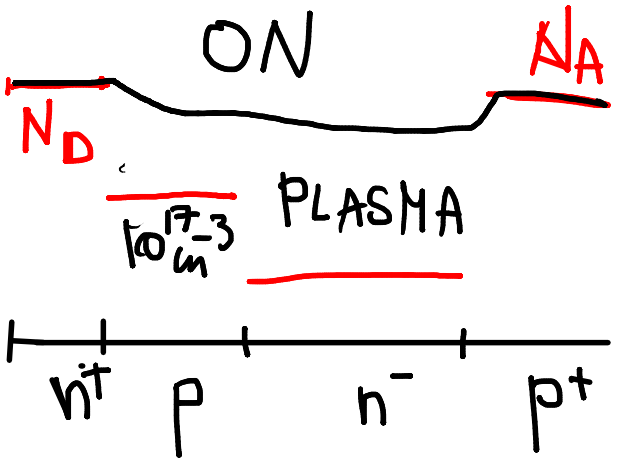
$i_G \uparrow \; i_{C_2} \uparrow \; M \uparrow \; \alpha_{pnp} \uparrow$

$$i_A = \frac{+\alpha_{npn} i_G - I_{co_1} + I_{co_2}}{(1 - \alpha_{pnp} - \alpha_{npn})}$$

$\alpha_{pnp} + \alpha_{npn} < 1$ ben minore — OFF

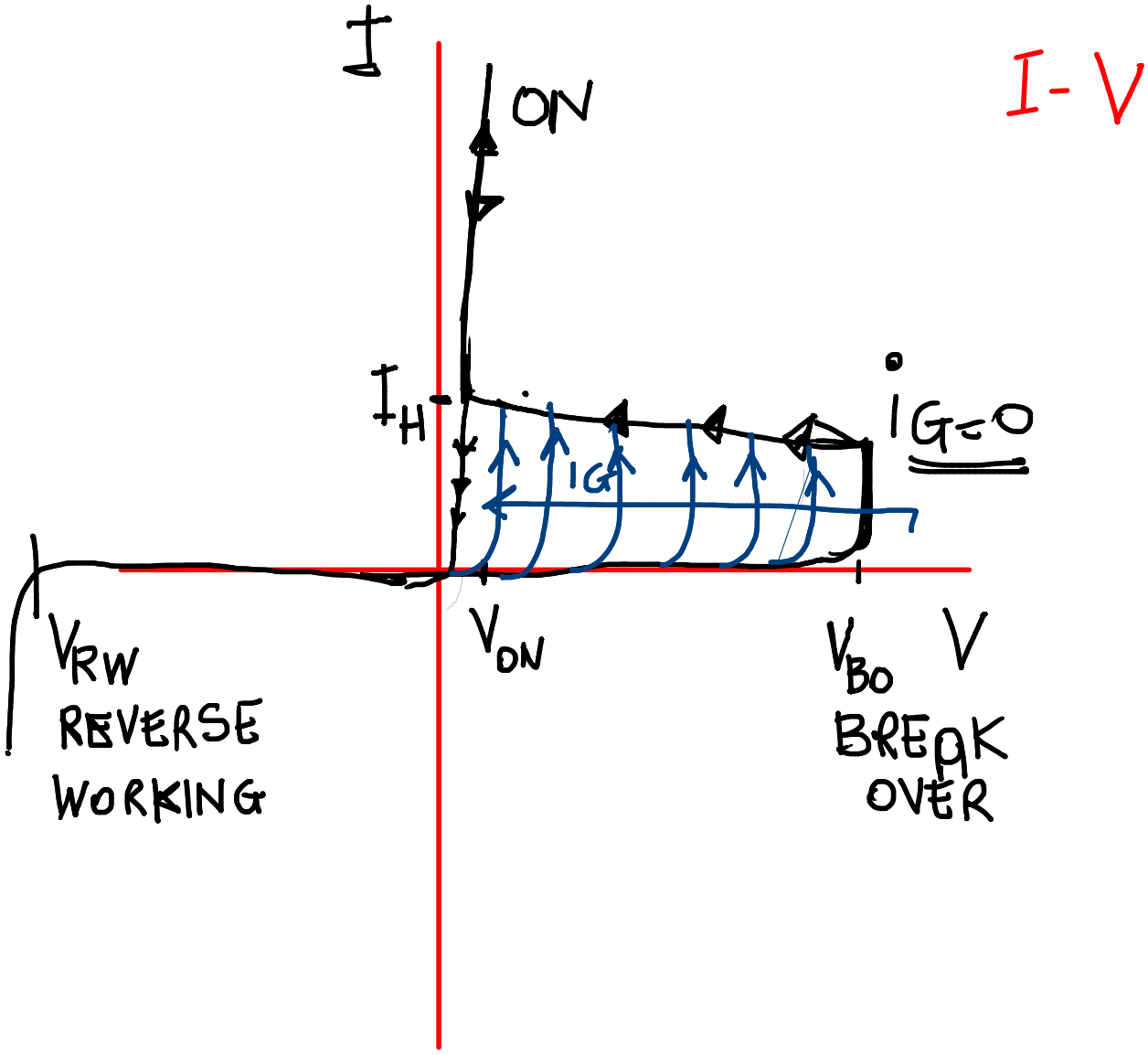
$\alpha_{pnp} + \alpha_{npn} \sim 1$ — ON



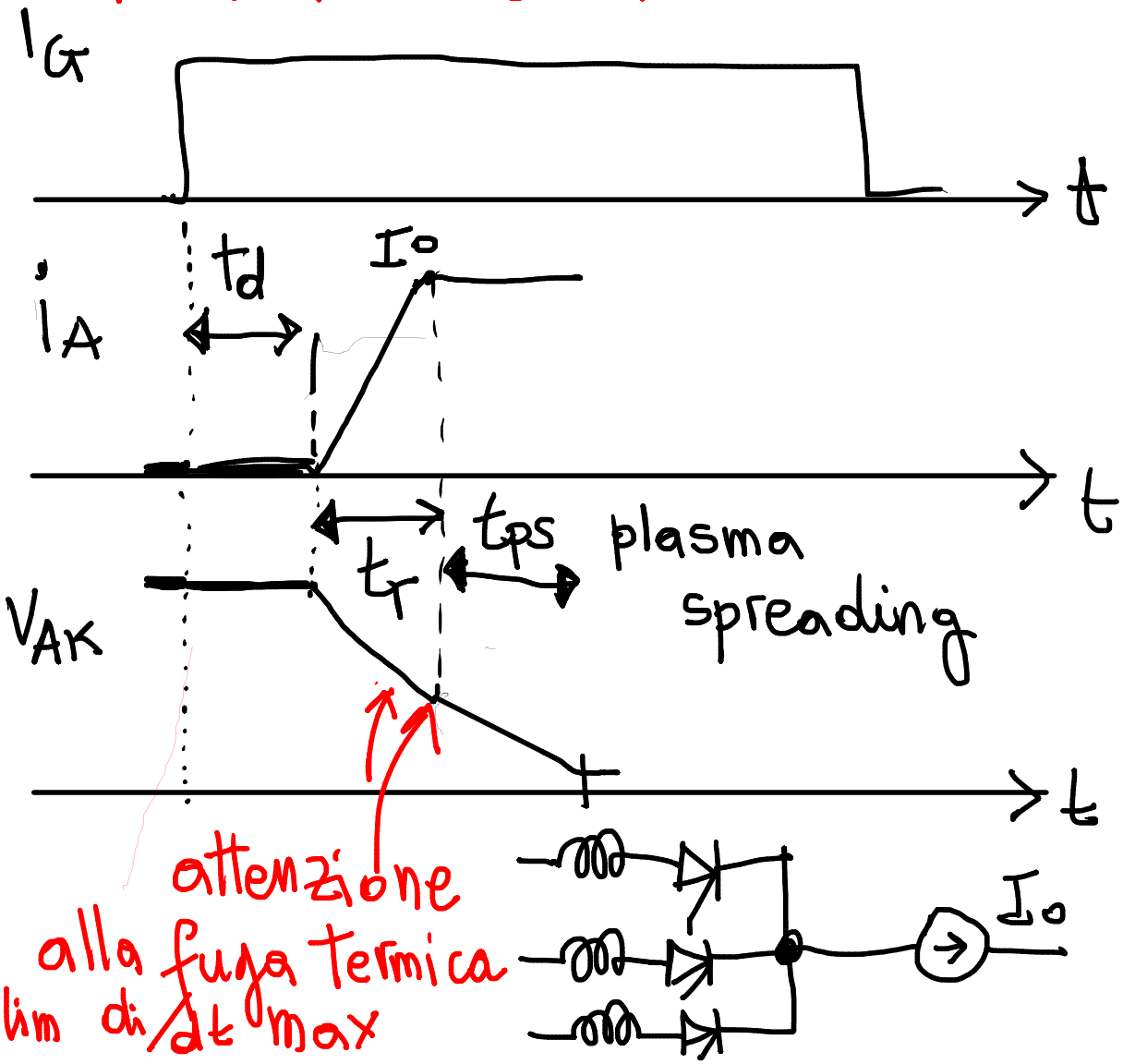


$$V_{ON} = V_J + R_d I + V_{CEsat}$$

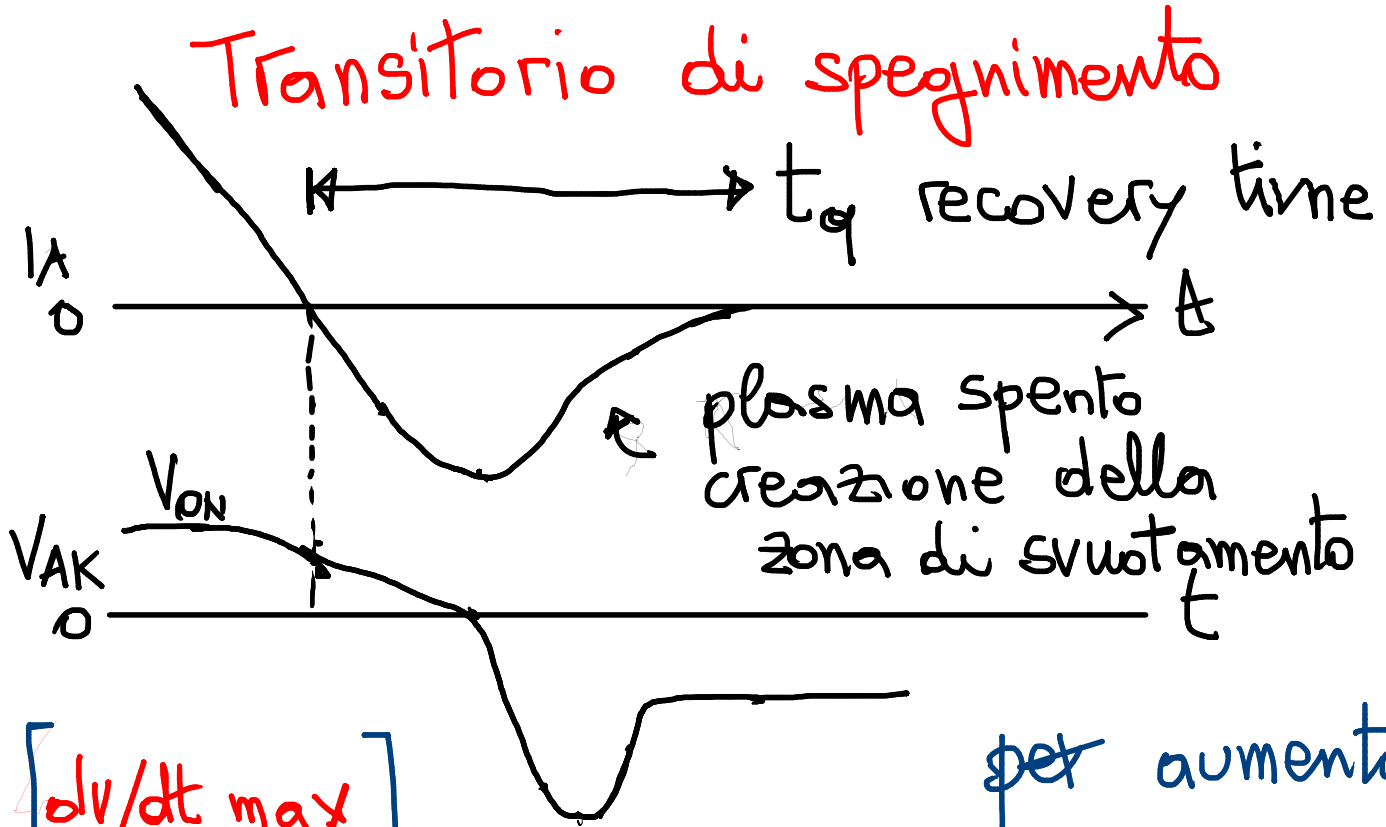
$\sim 2V$


I
ON
I - V
I_H
I_G
$I_G=0$
V_{RW}
REVERSE
WORKING
V_{ON}
V_{BO}
V
BREAK
OVER

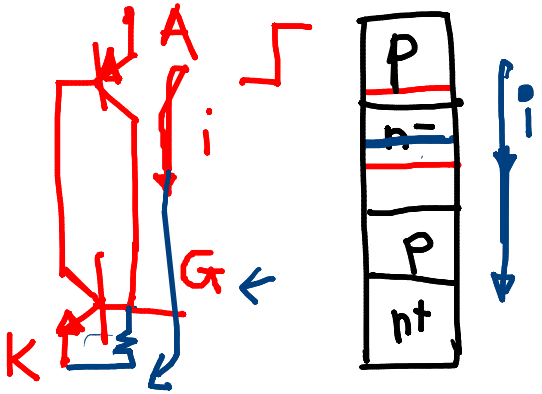
Transitorio di accensione



Transitorio di spegnimento

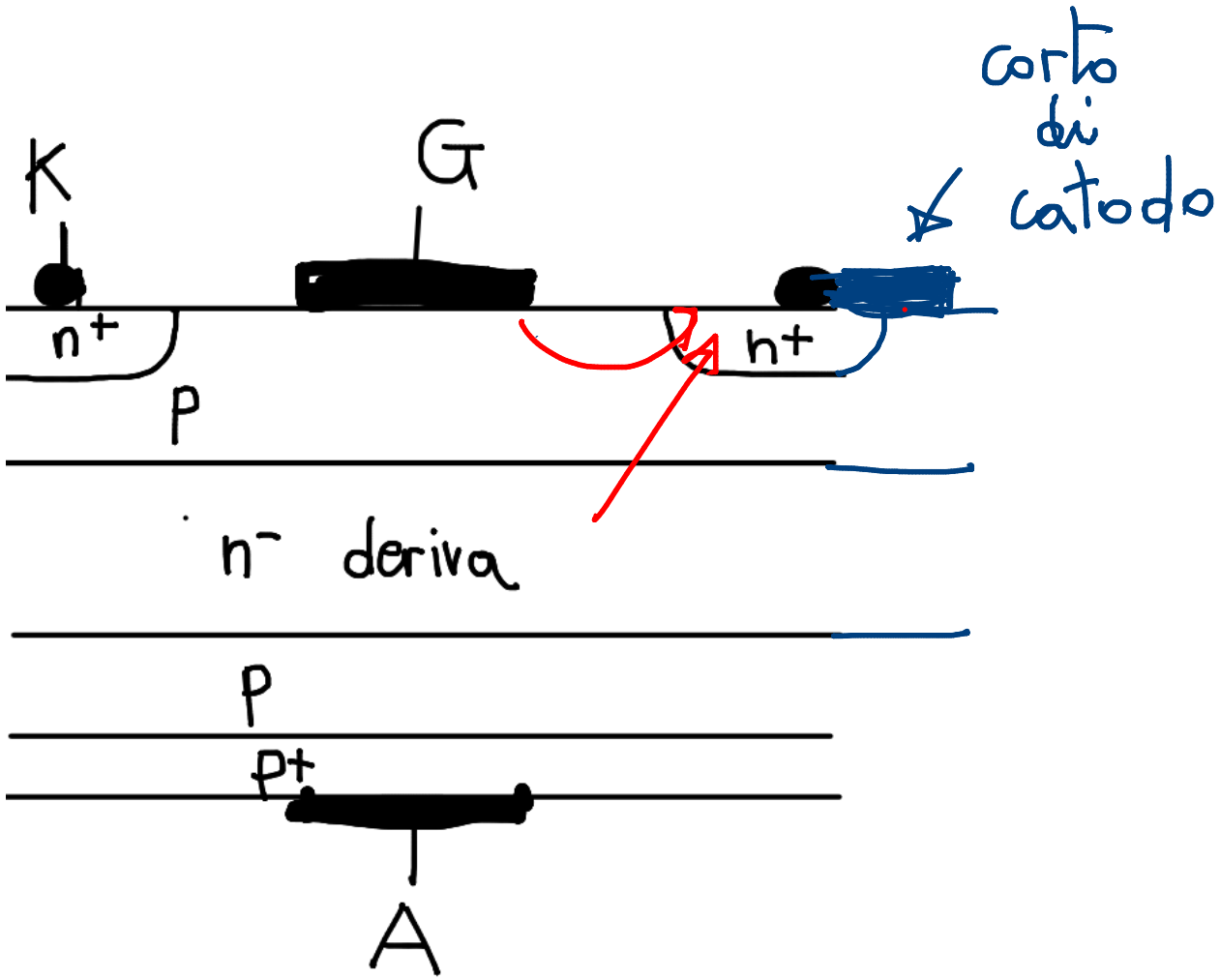


[dv/dt max]



$(V_{AK} < 0)$

per aumentare dv/dt max
corto circuito di K


corto
di
catodo
K
G
n+
P
n+
n- deriva
P
P+
A