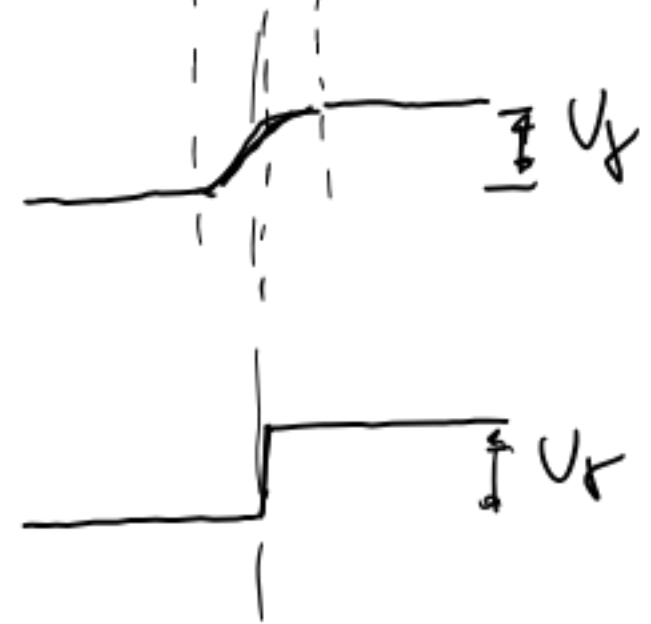
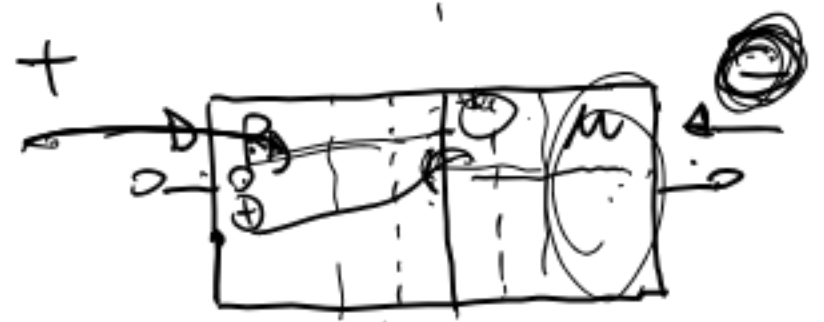


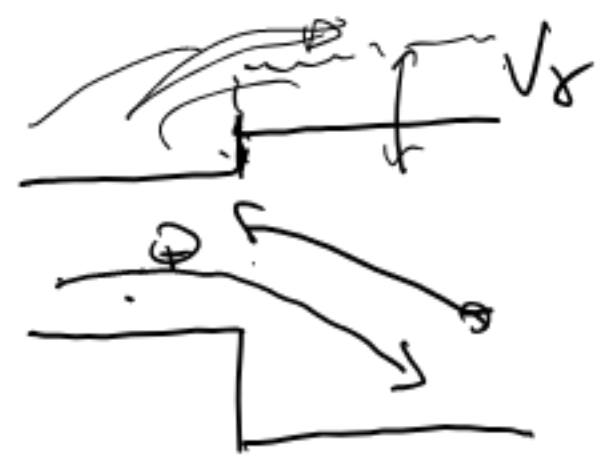
DIODO



Rel. INVERSA



(+)



(=)

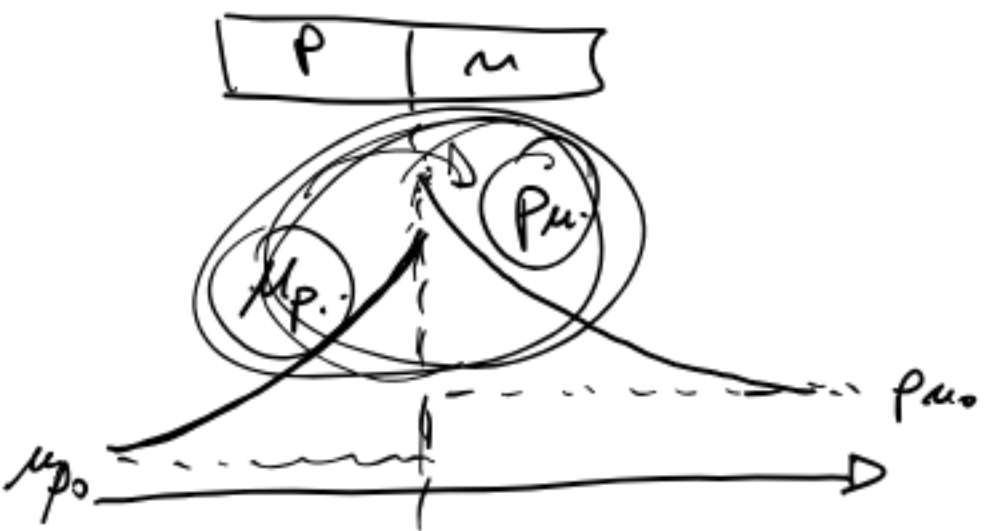
"condutzione"

(I)

$V_f R \approx \Omega$
 $\approx \mu m$

POC. DIR.

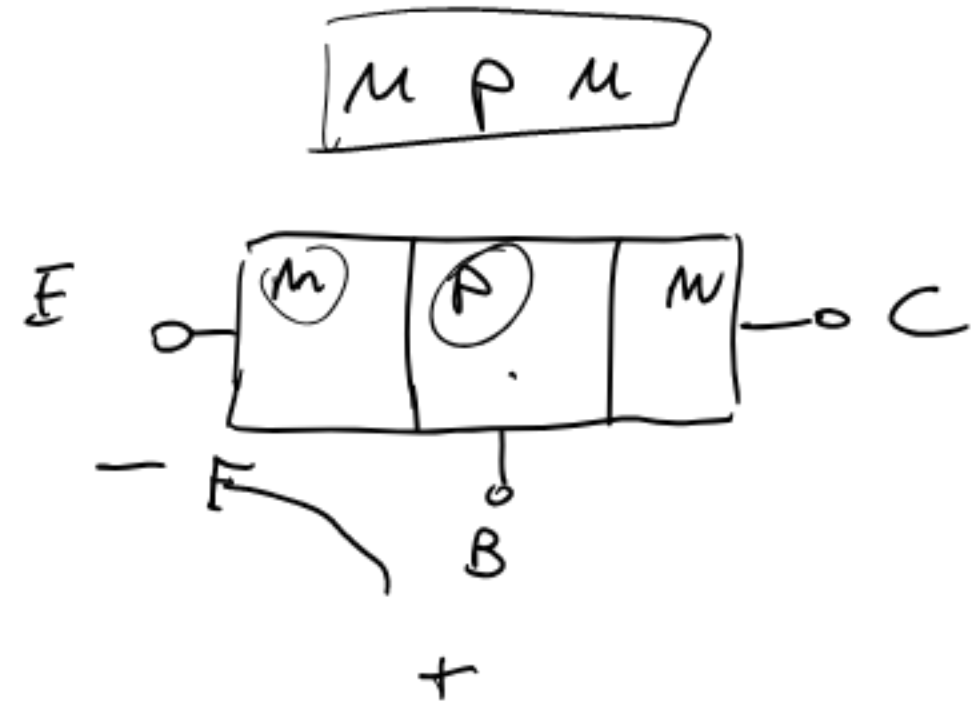
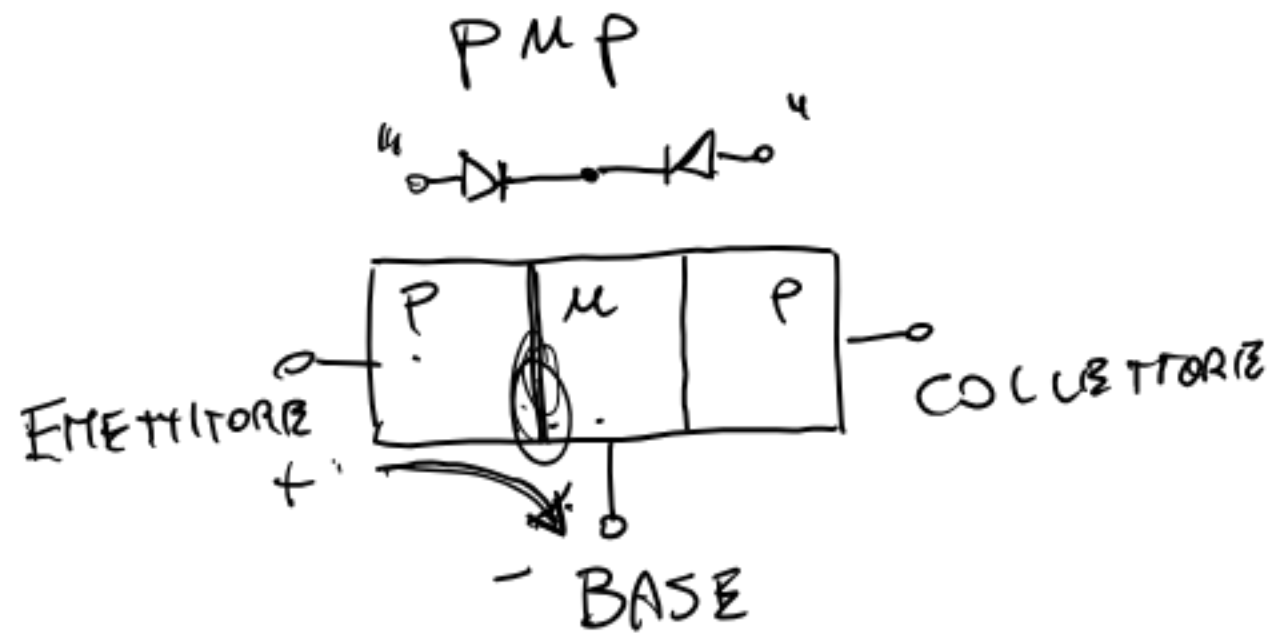
POC. INVERSA



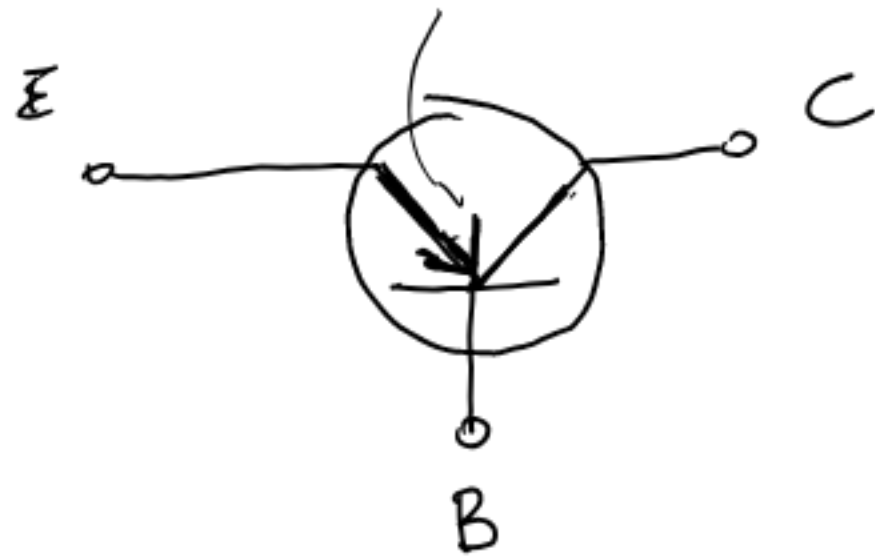
$I_{SAT} \approx \mu A$

$R \approx 10 \Omega$
 $\approx \mu m$

TRANSISTORE A GIUNZIONE

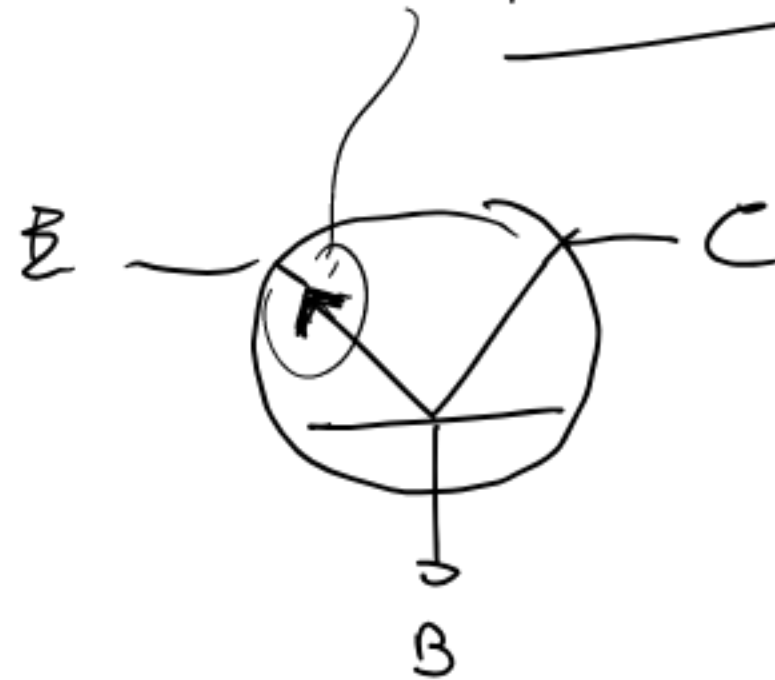


Pol. sinistra EB

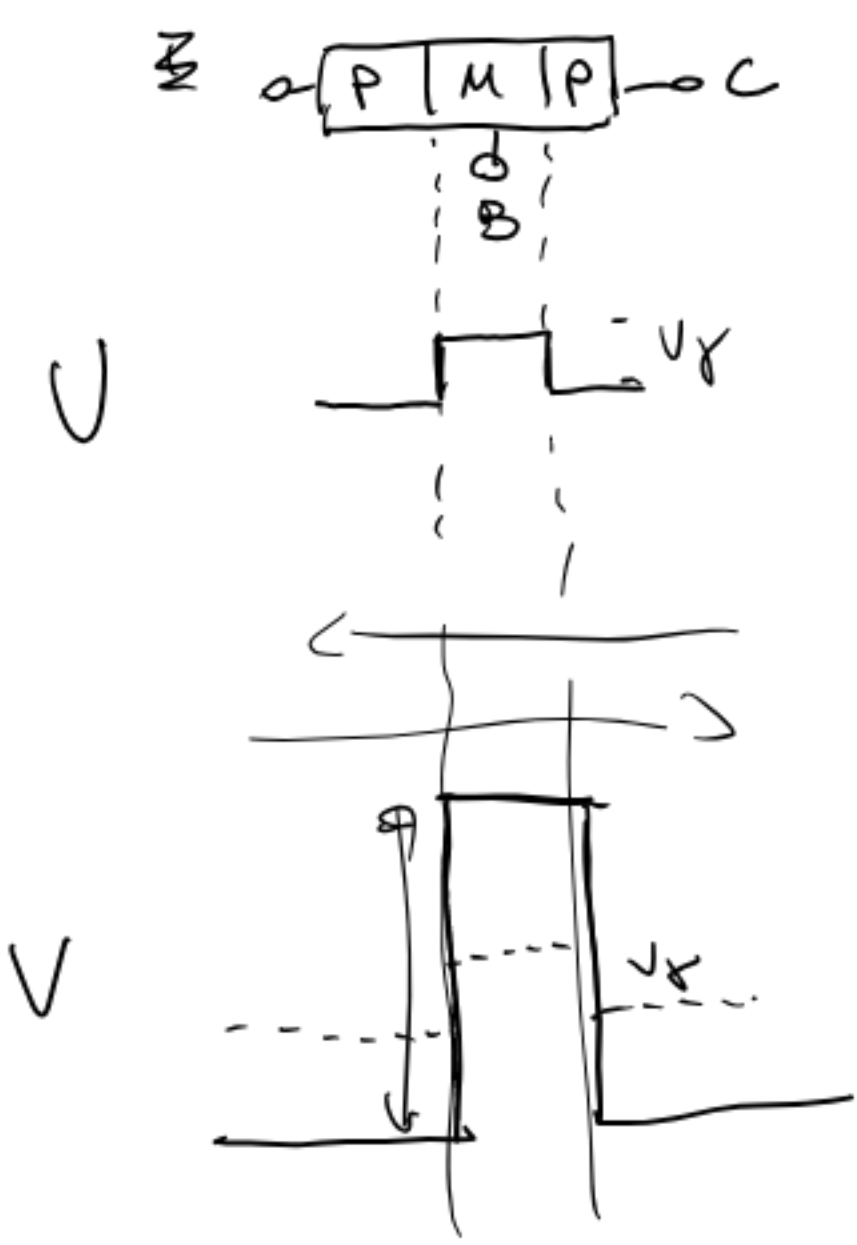


pmp

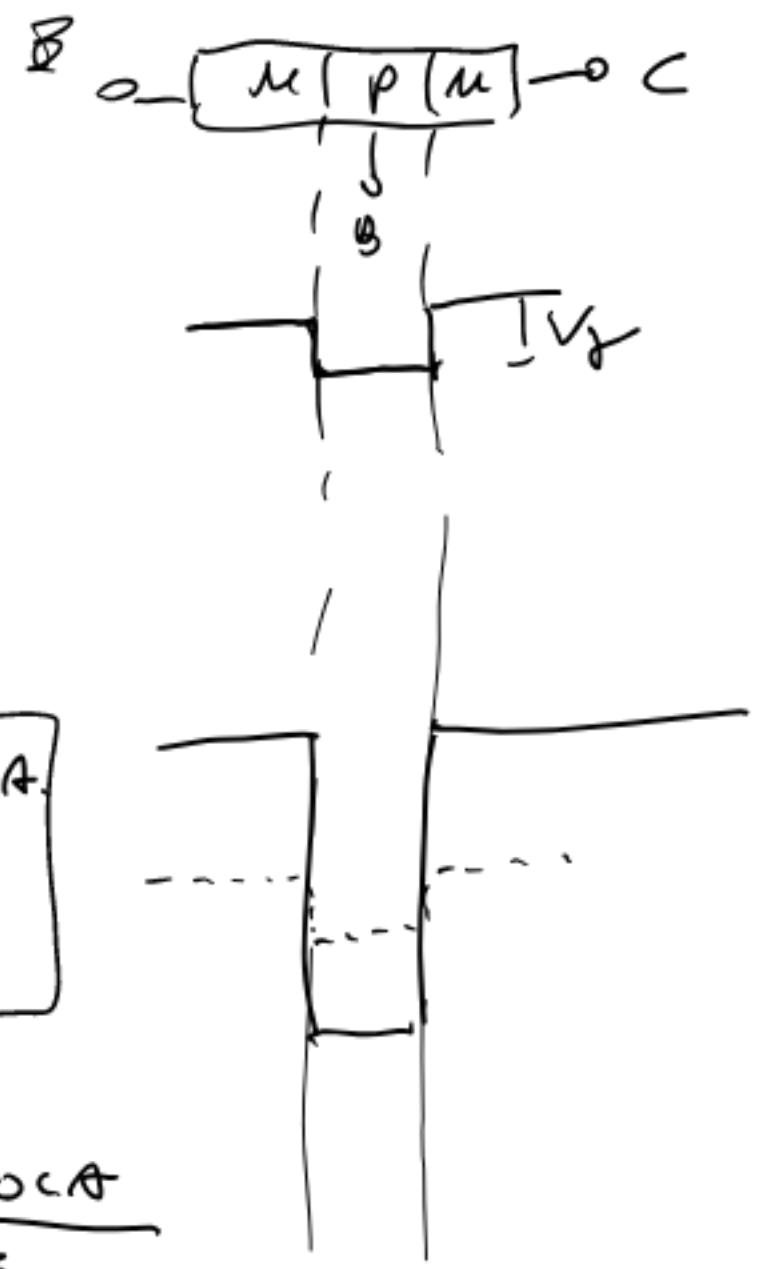
Pol. destra EB



mpn



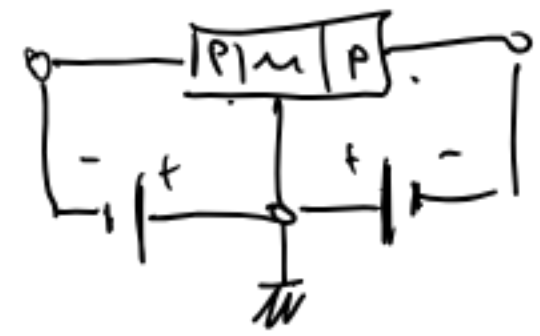
CIRCUITO APERTO

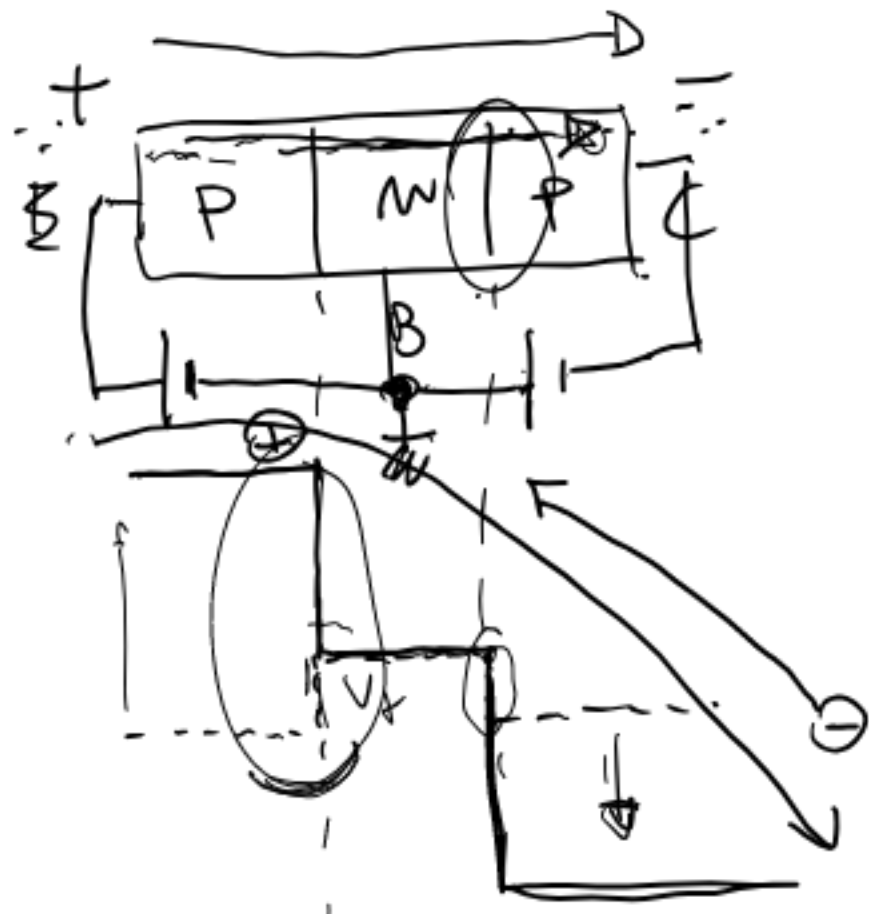


ROL. INVERSA
EB/BC

NON CIRCOLO
CORRENTE

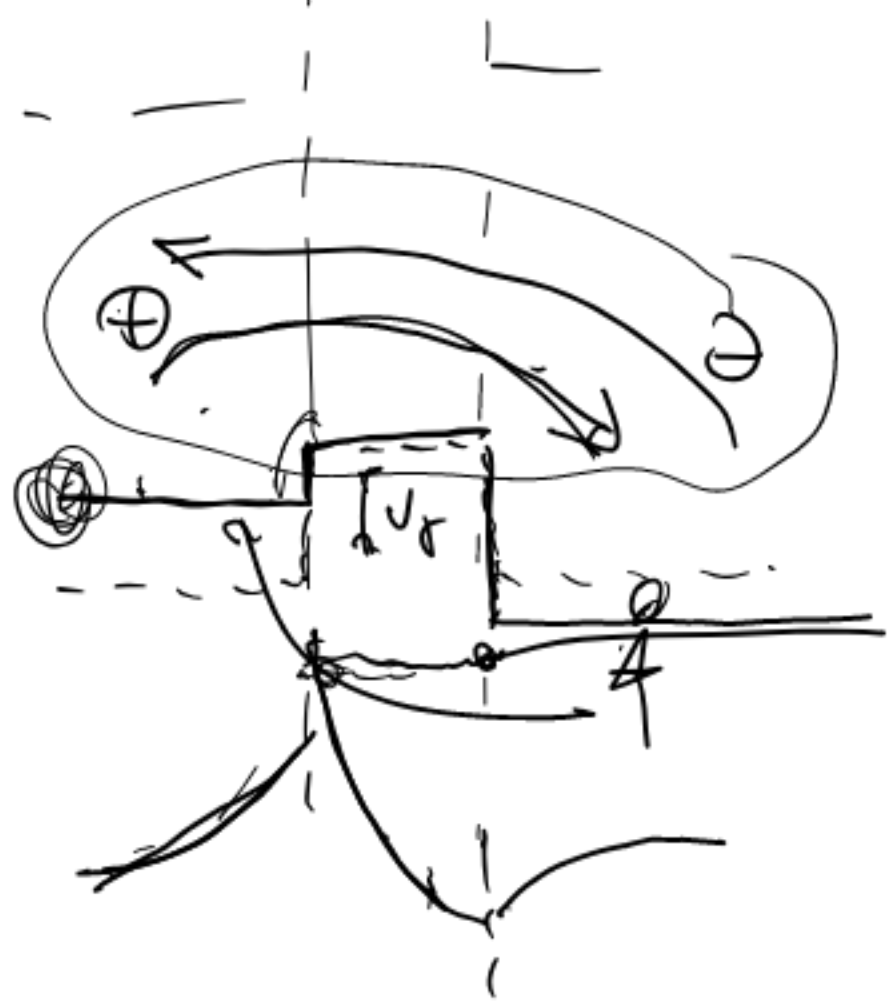
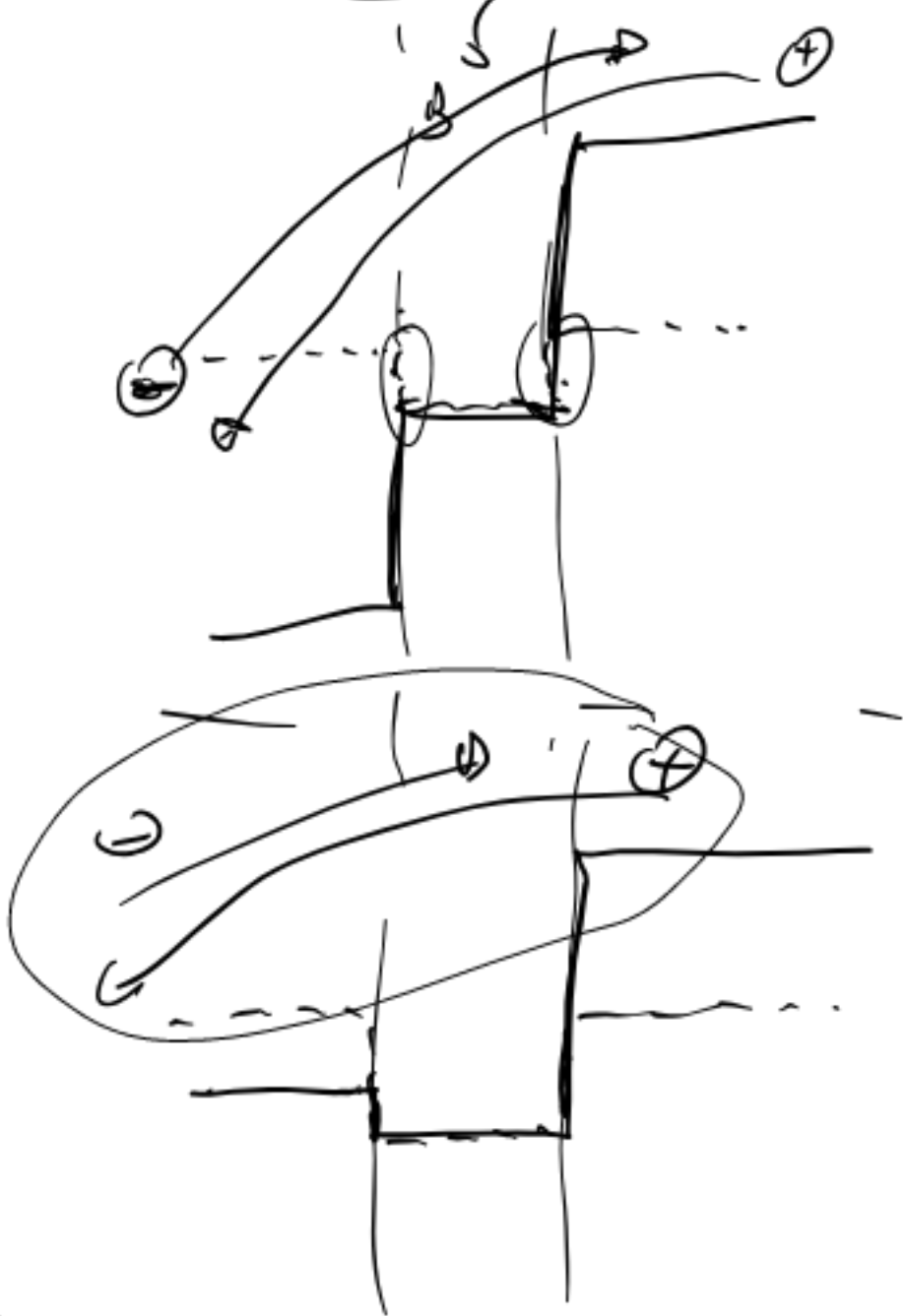
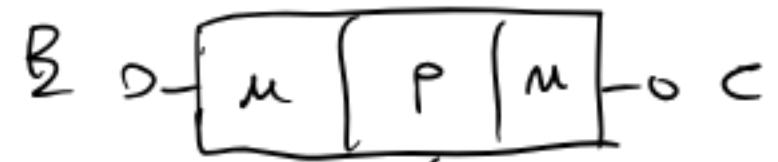
TRANSISTOR
INTERDETTO





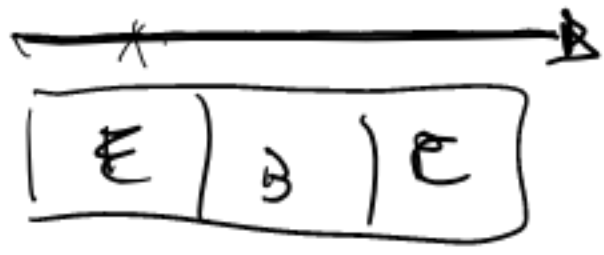
EB POL. DIRETTAMENTE
 BC POL. INVERSAAMENTE

CONDUZIONE
 $E \rightarrow C$
 $V \gg V_f$
 segnali grandi



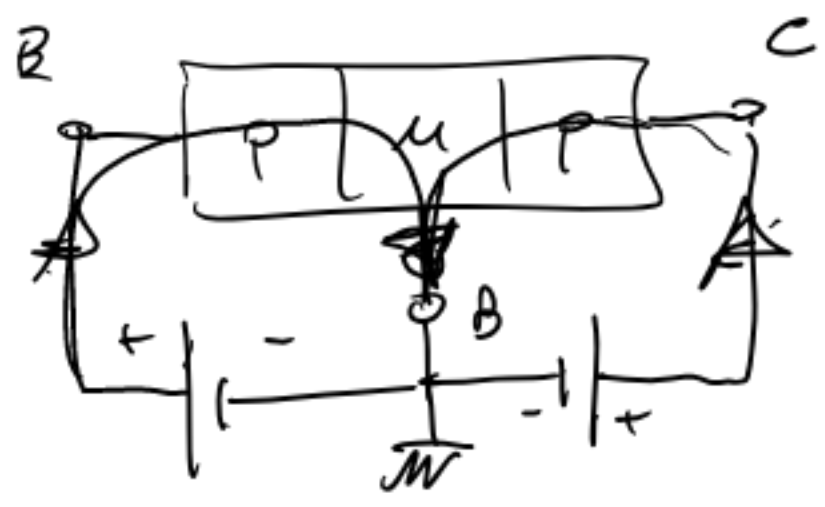
segnali piccoli
 $V \approx V_f$

TRANSISTOR
 ATTIVA

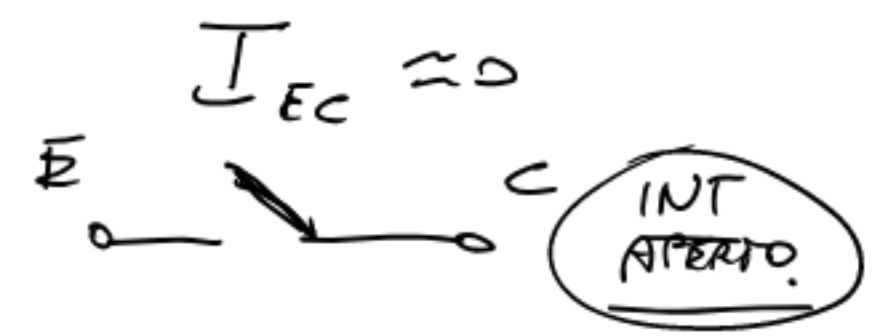


EB/BC POL. DIRETTA

↓
TRANSISTOR
IN SATURAZIONE

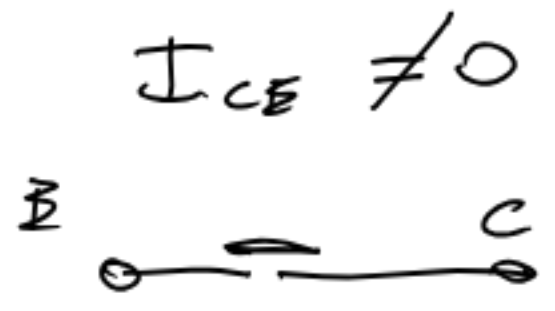


EB/CB POL. INVERSA INTERDETTO



{ EB POL. DIRETTA
BC POL. INVERSA

REGIONE
ATTIVA



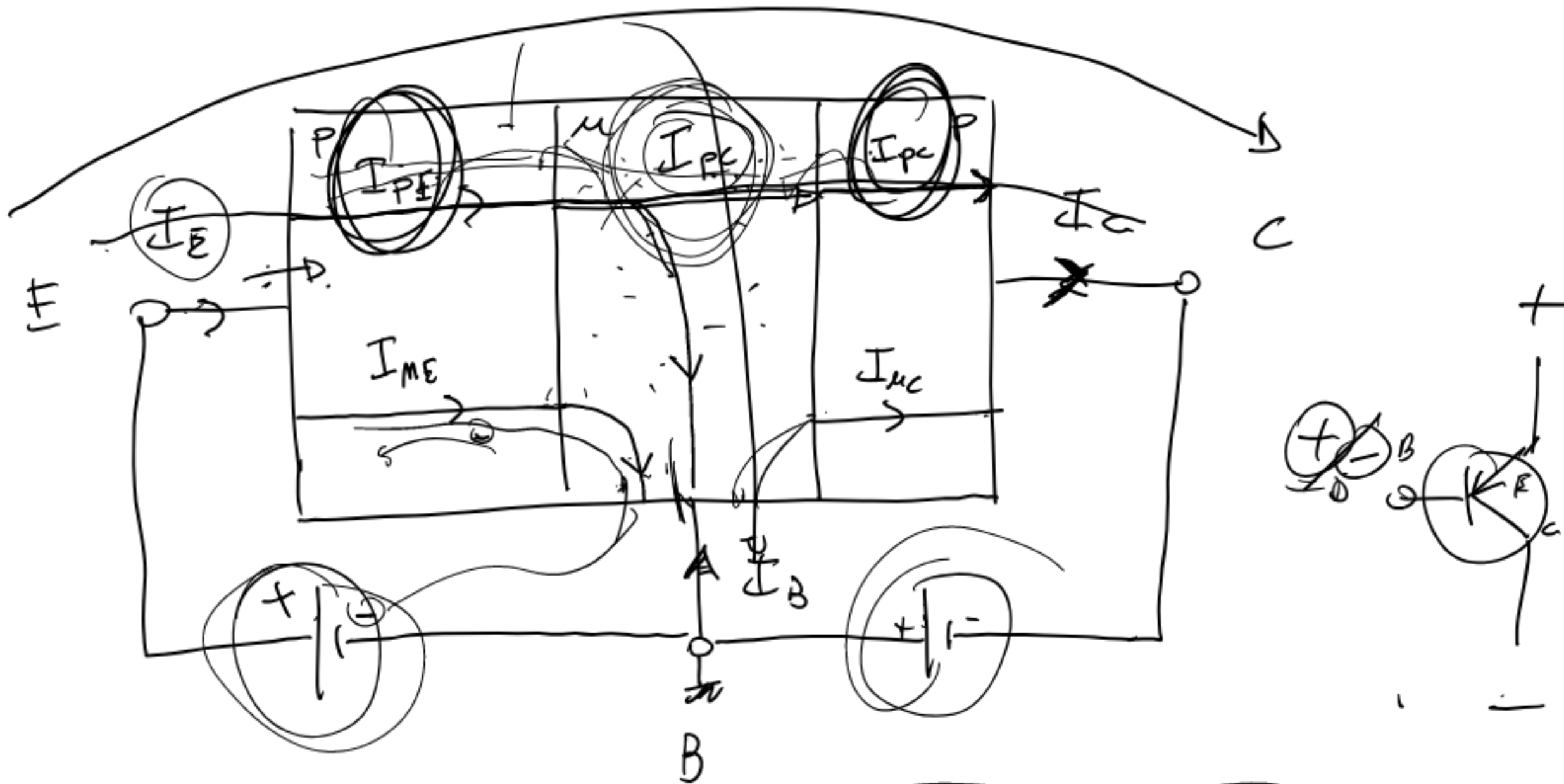
INT
CHIUSO

EB/CB POL. DIR. SATURAZIONE



REG. ATTIVA

6

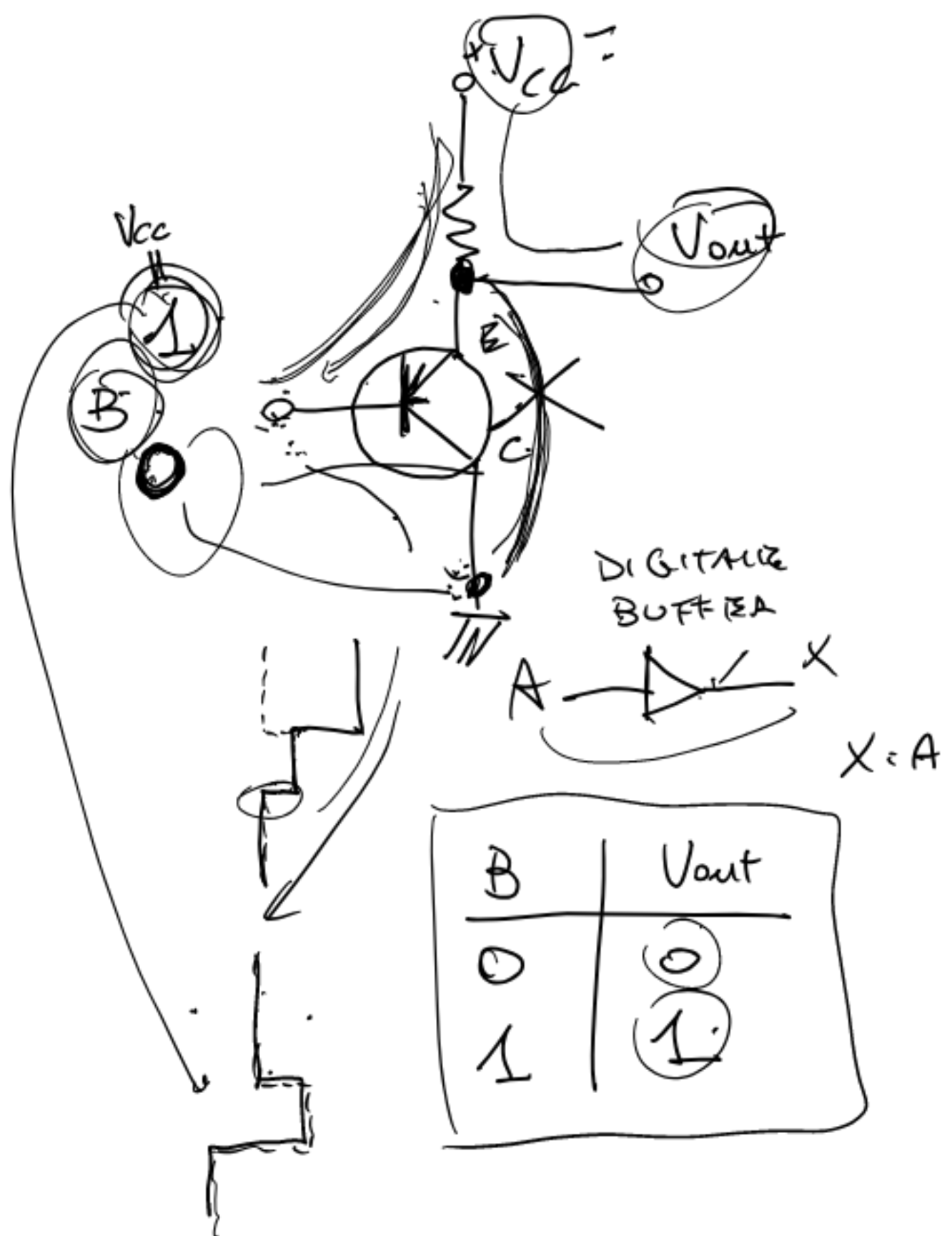


$$I_{PC} = \alpha I_E$$

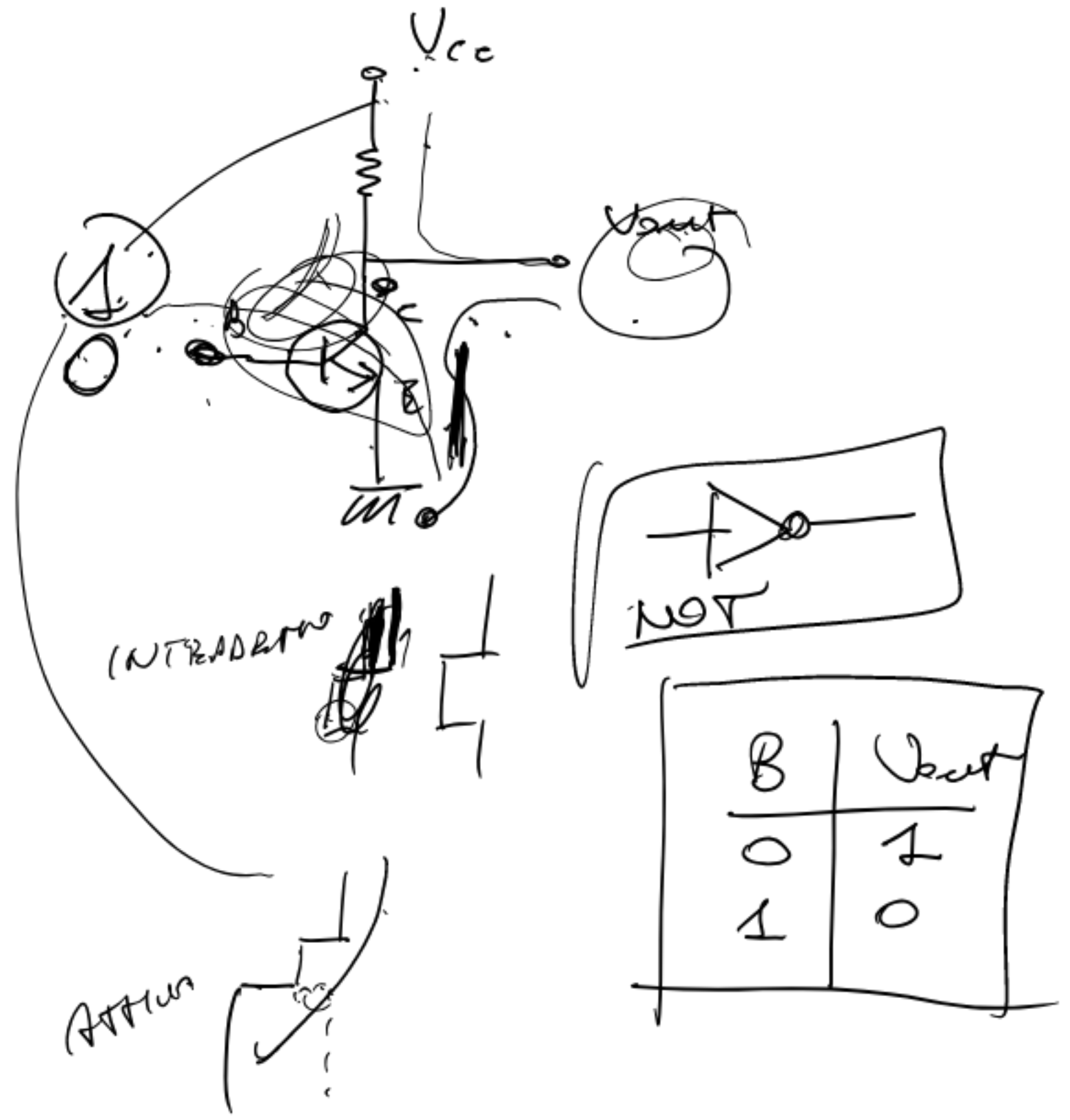
$$\alpha \approx 0,90 \div 0,99$$

TRANSISTOR COME INERADTORE

PM P



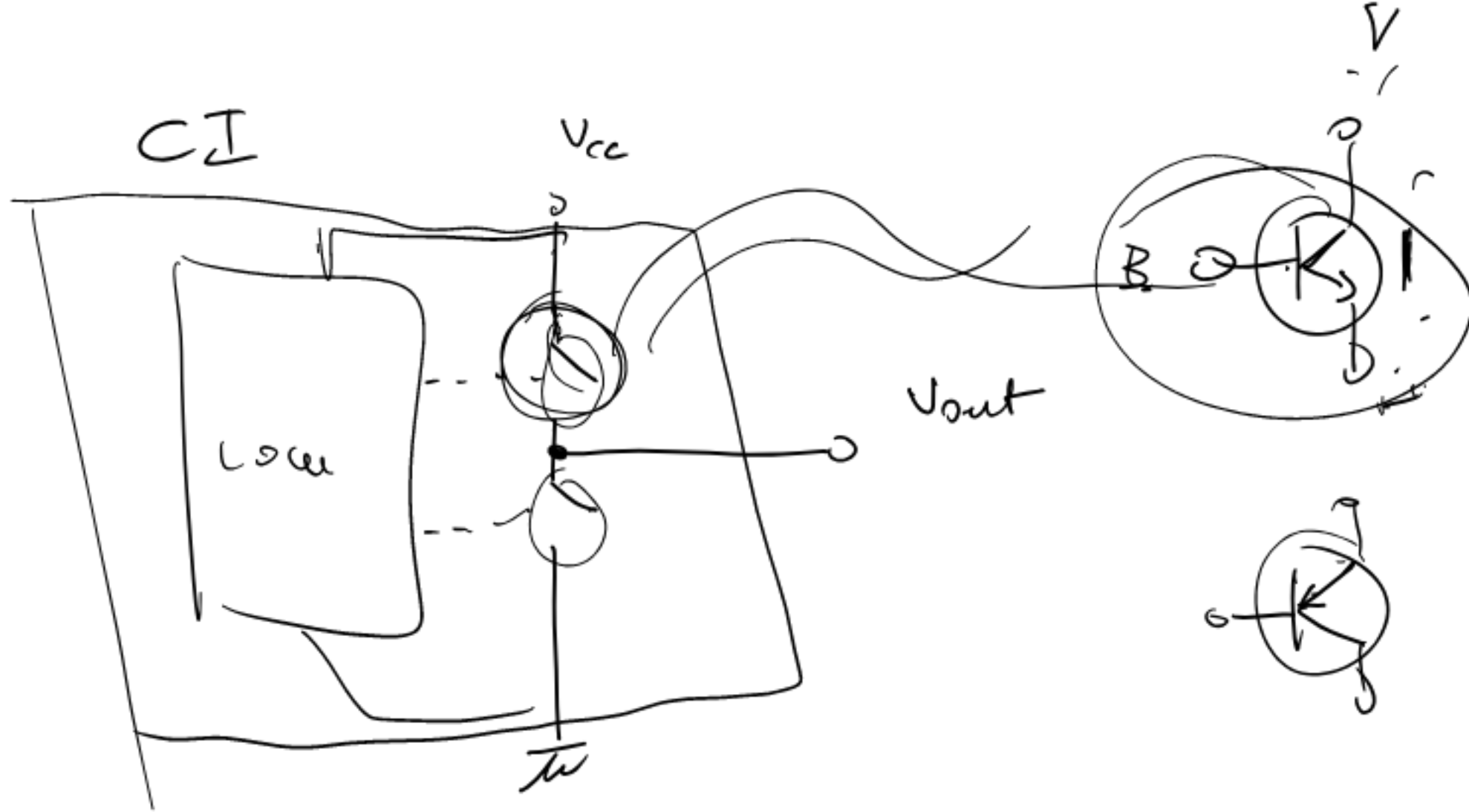
MP M



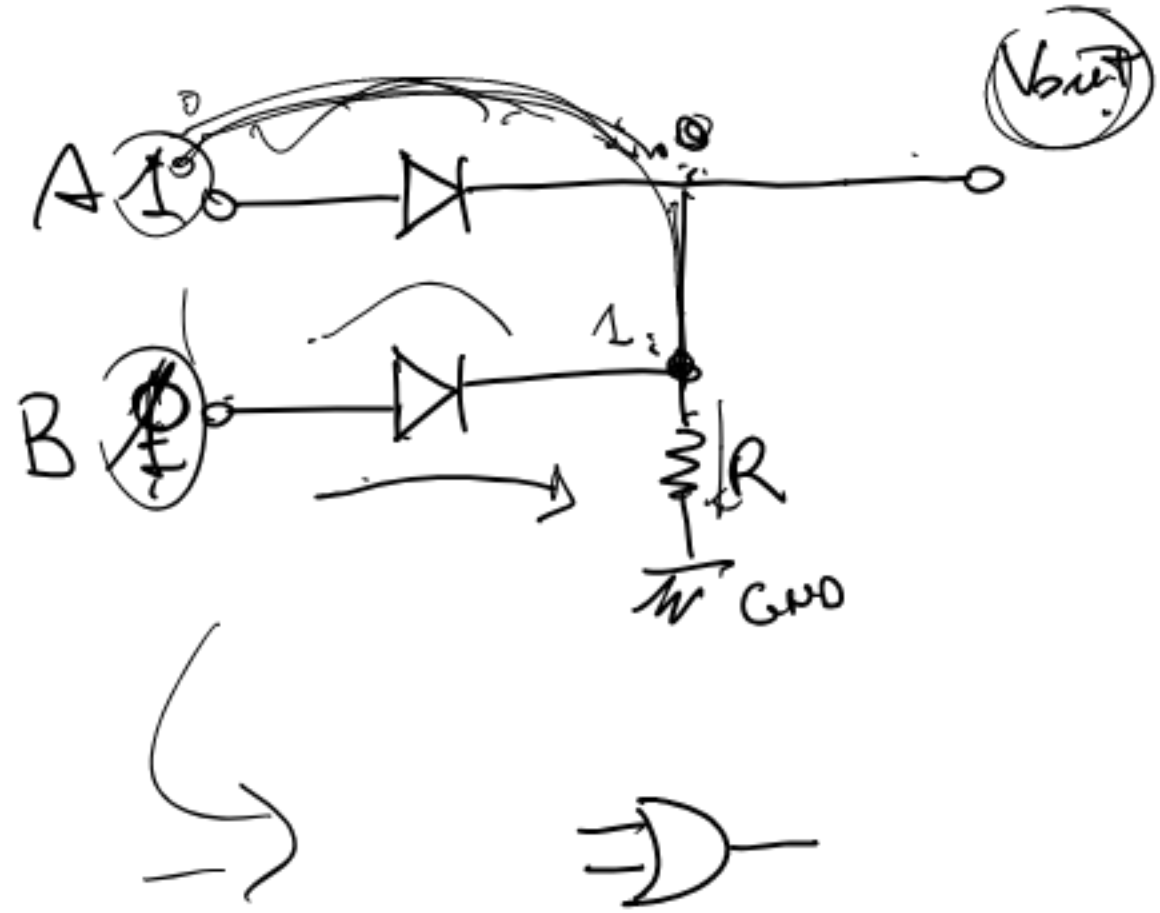
ATTEN

USCITE BI

8

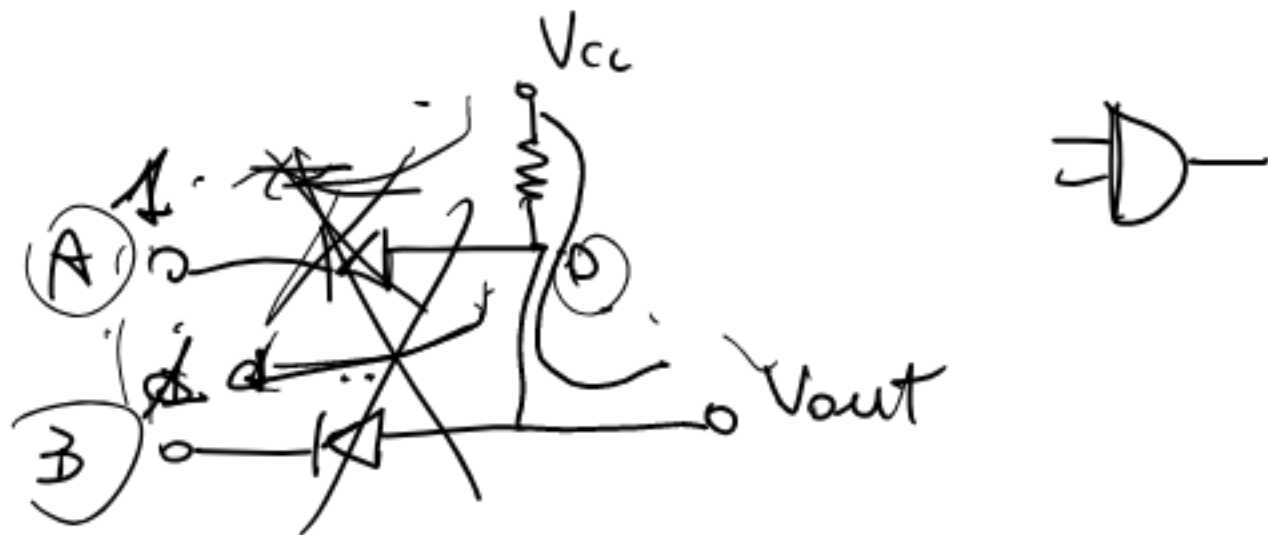


OR gate using Diodes



A	B	Vout
0	0	0
0	1	1
1	0	1
1	1	1

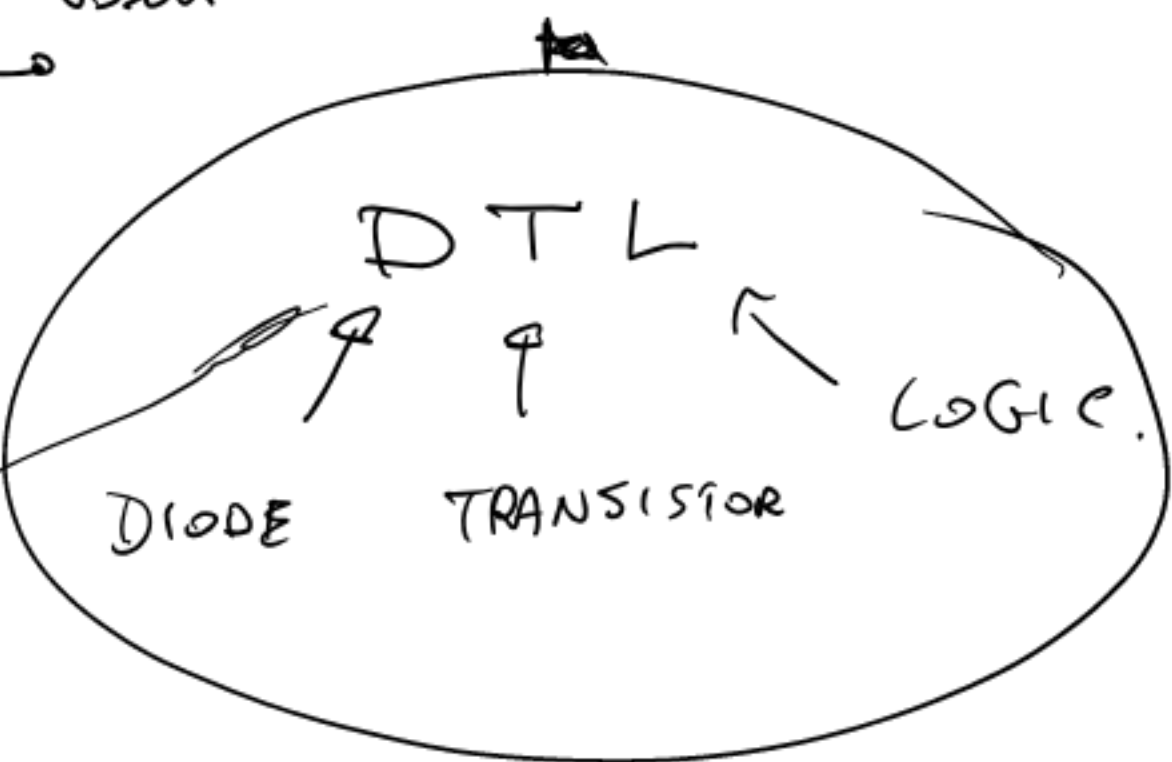
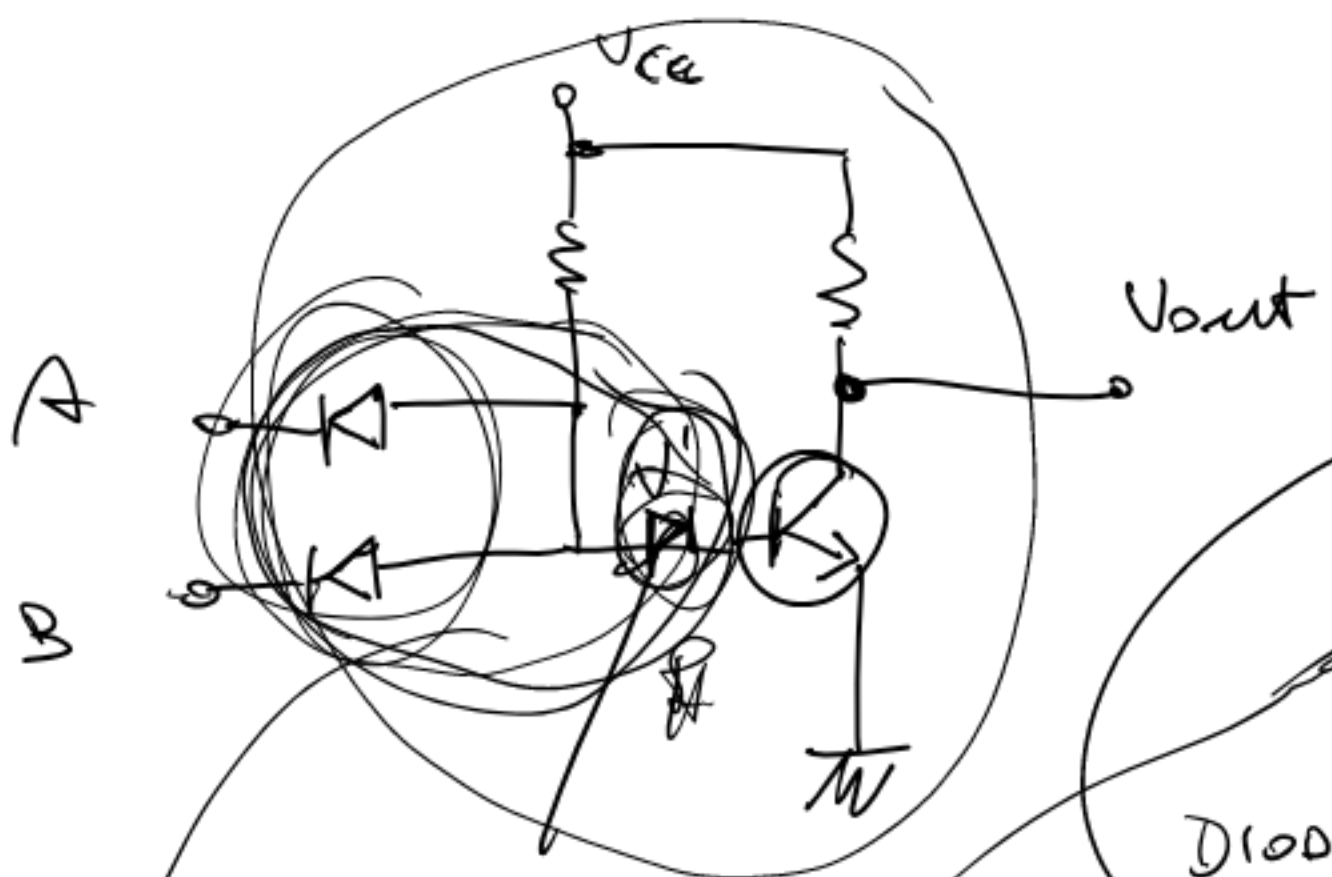
AND gate using Diodes



A	B	Vout
0	0	0
0	1	0
1	0	0
1	1	1

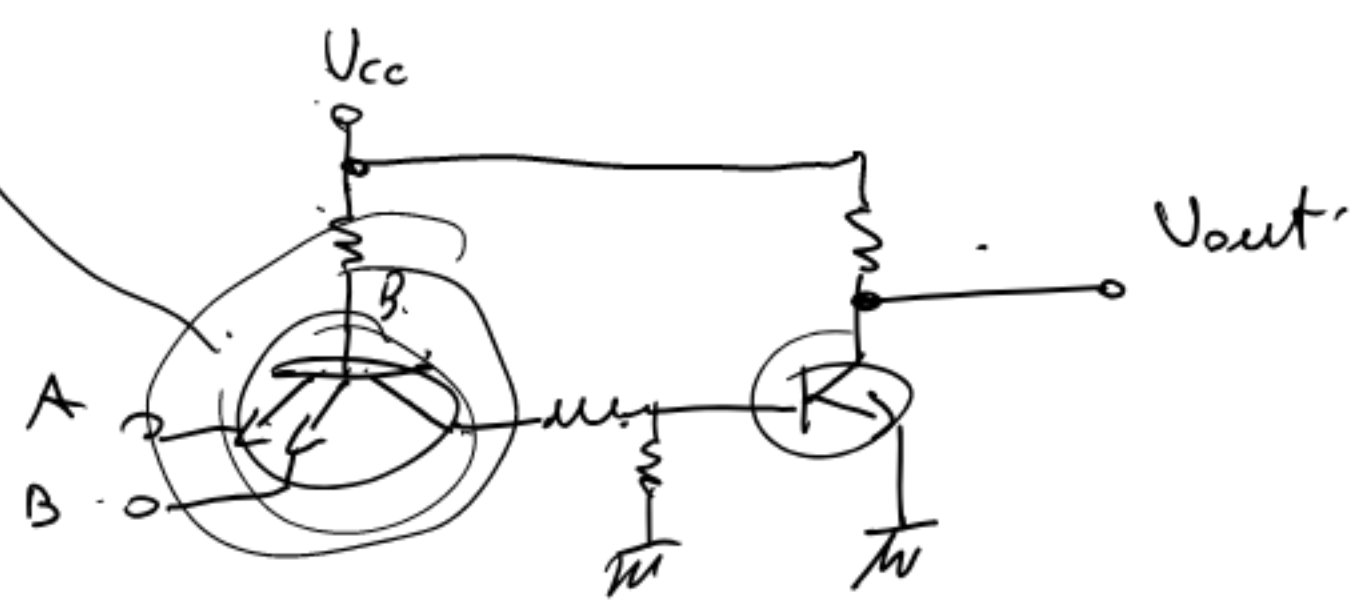
NAND DIODE + TRANSISTOR

$$V_{out} = \overline{V'} = \overline{A \cdot B}$$



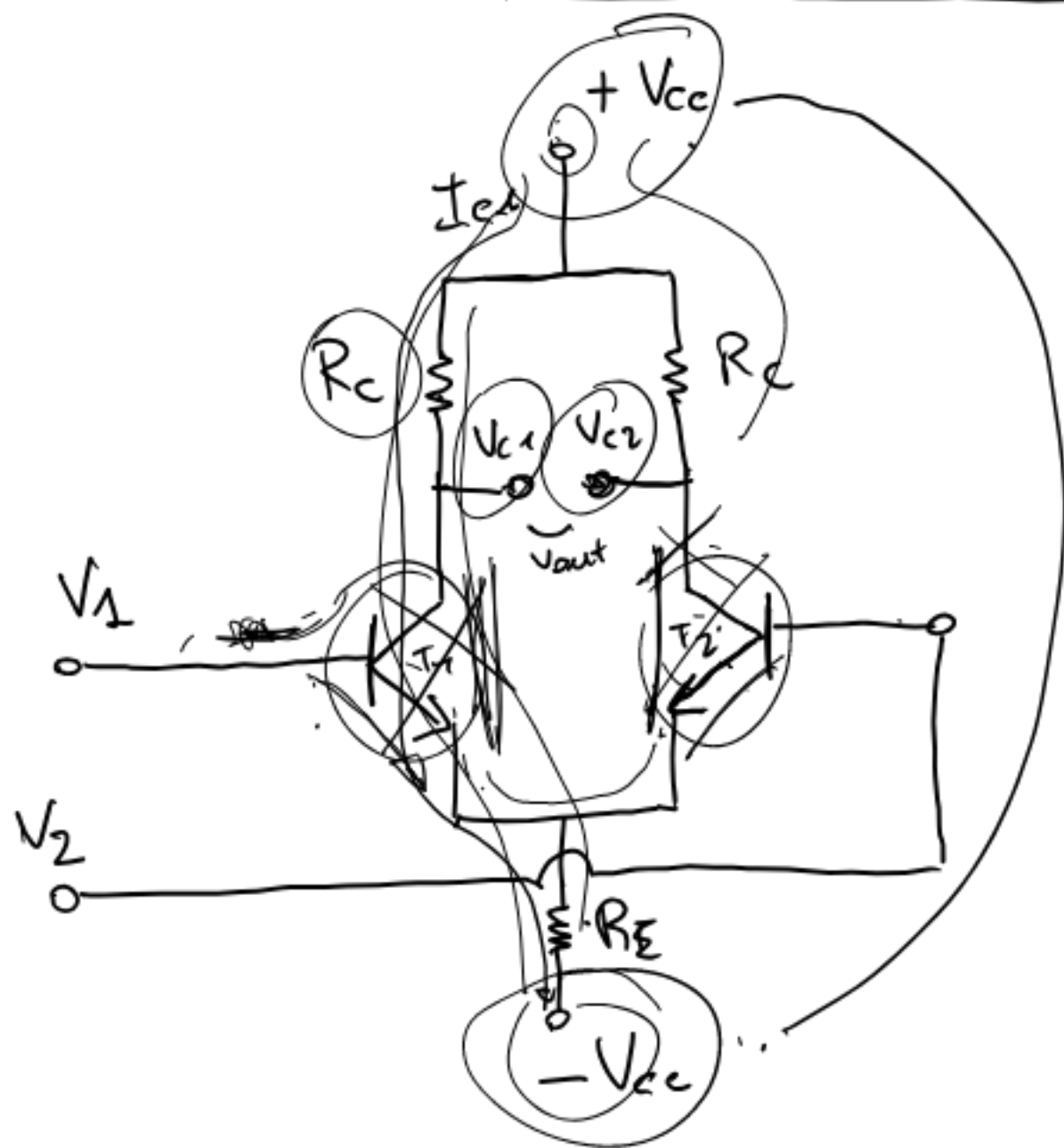
TTL

TRANSISTOR / TRANSISTOR LOGIC



OPEN COLLECTOR

AMPLIFICATORE DIFFERENZIALE



$$V_{out} = V_{c2} - V_{c1}$$

$$V_{in} = V_1 - V_2$$

$$V_1 \gg V_2$$

T₁ ATTIVA.
(COND)

T₂ INTERDETTO

$$V_{c2} = V_{cc}$$

$$V_{c1} = V_{cc} - R_c I_{c1}$$

$$I_{c1} = \frac{+V_{cc} - (-V_{cc})}{R_c + R_E} = \frac{2V_{cc}}{R_c + R_E}$$

$$V_{out} = V_{c2} - V_{c1} = V_{cc} - V_{cc} + R_c I_{c1} = 2V_{cc} \frac{R_c}{R_c + R_E}$$

$$V_1 \gg V_2 \quad V_{out} = 2V_{cc} \frac{R_c}{R_c + R_E} = V_{SAT}$$

$$V_1 \ll V_2 \quad V_{out} = -2V_{cc} \frac{R_c}{R_c + R_E} = -V_{SAT}$$

