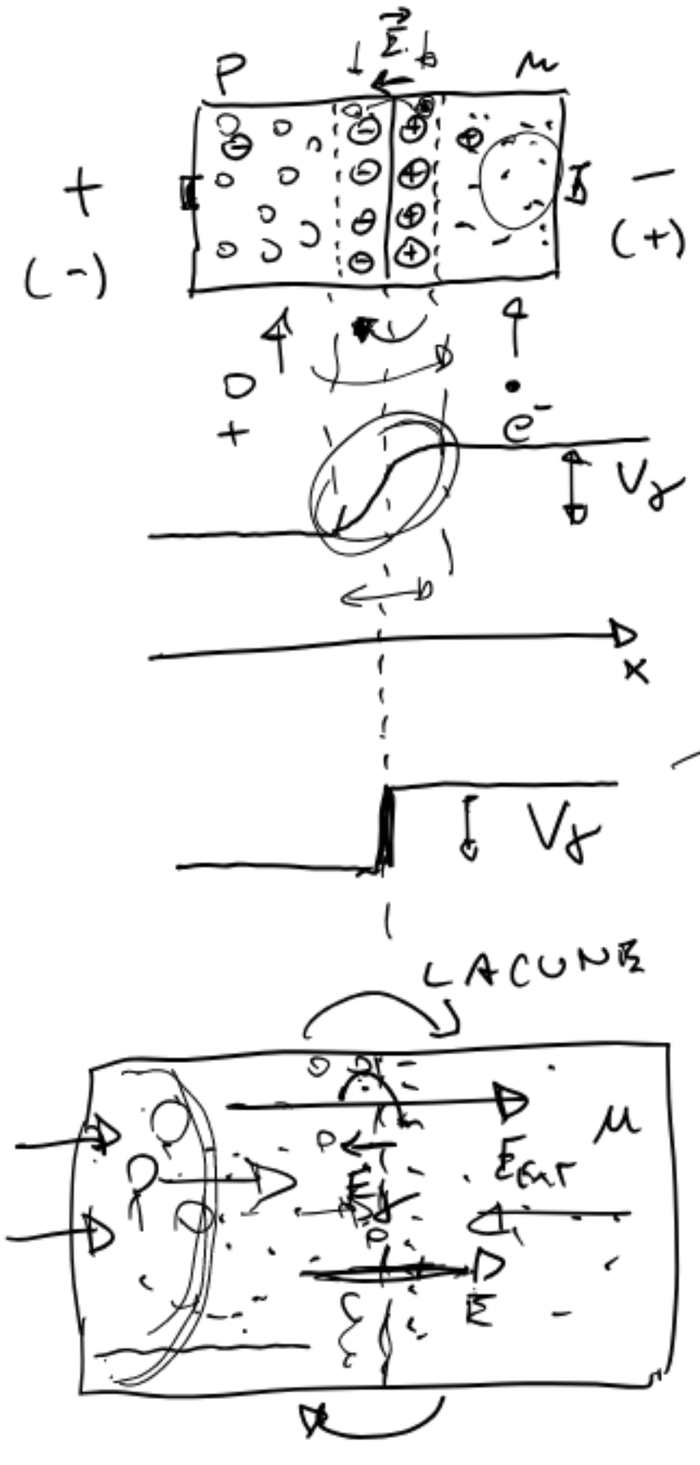
ELETTRONICA ANALOGICA 31/03/2020

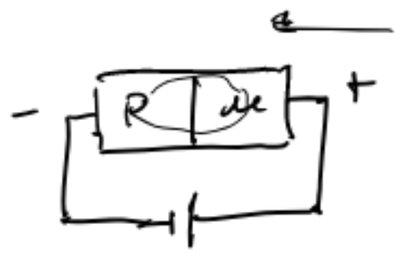
DIODO



DIODO / MODELLO LINEARE A TRATTI

$V >> V_\gamma$

POL. INVERSA



V_{EST} V_γ CONCORDI

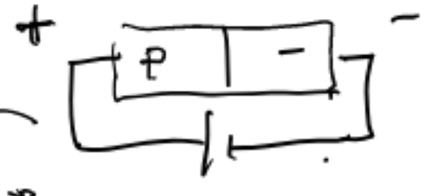
NON CONDUCE

$I_{SAT} \simeq \mu A$

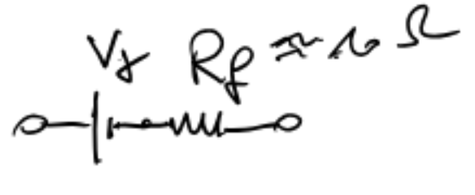
POL. DIRETTA

$|V| >> |V_\gamma|$

$V >> V_\gamma$

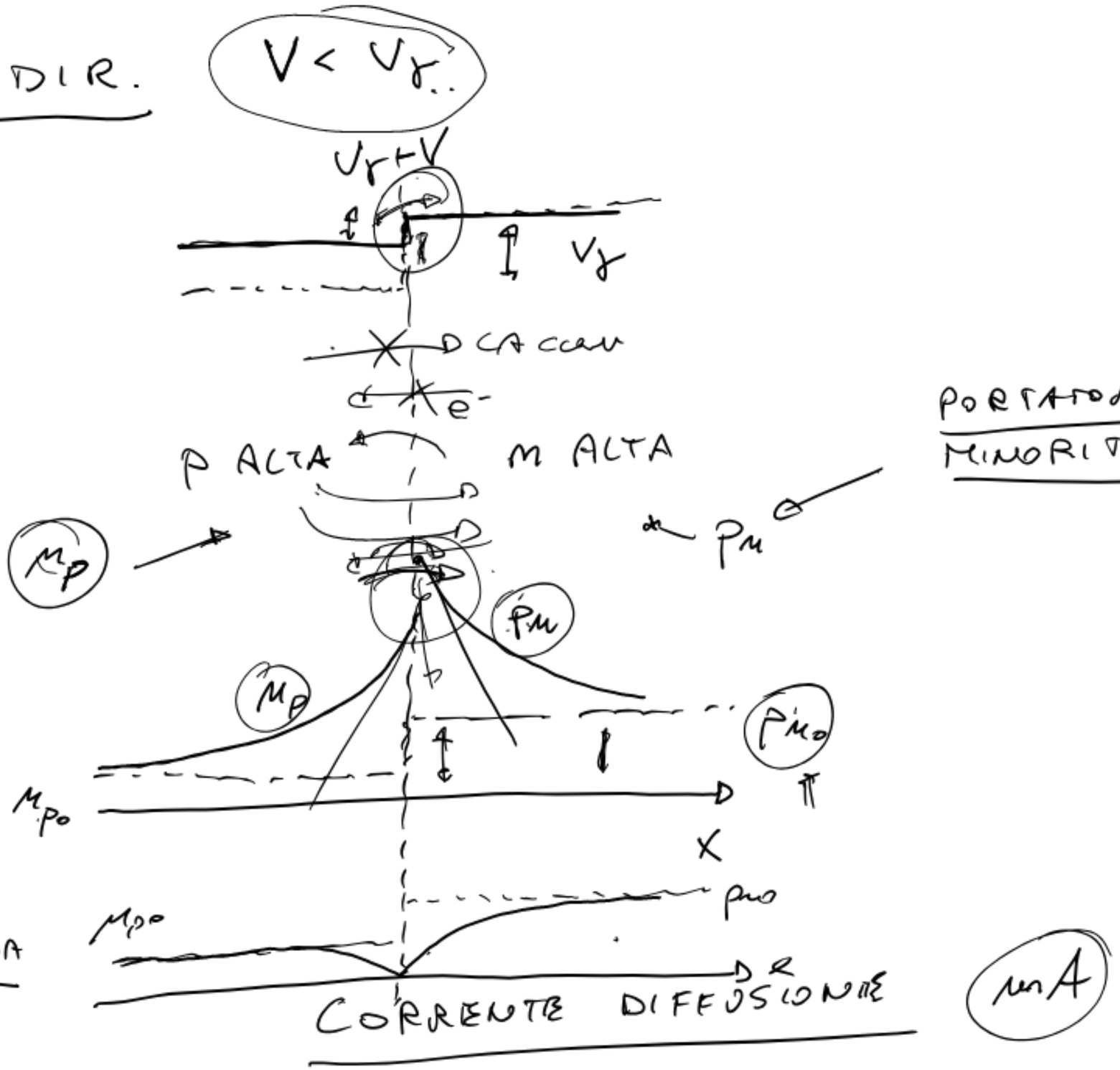


$I = I_p + I_n$



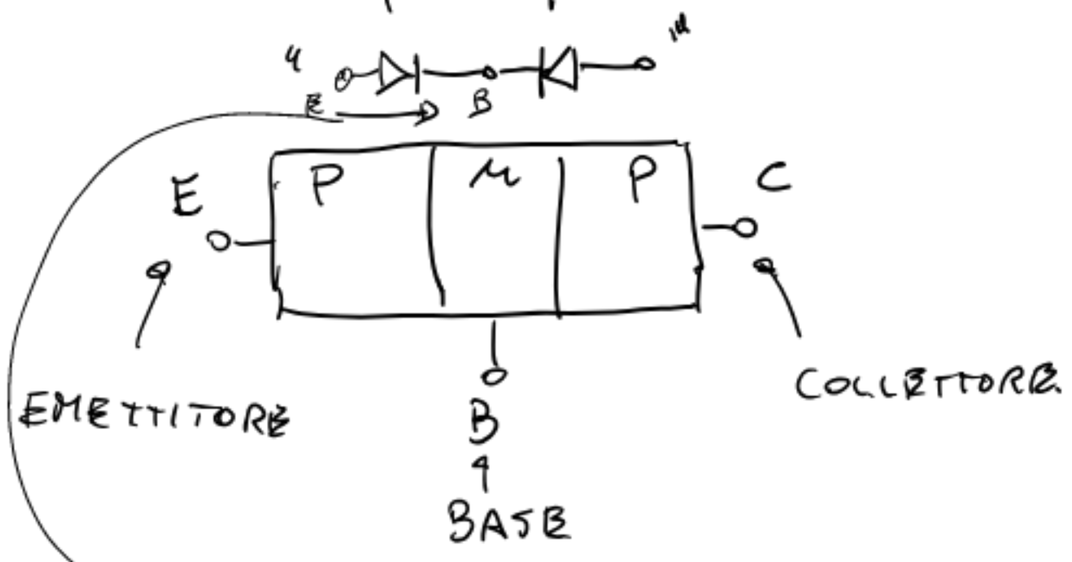
(2) CORRENTE DI DIFFUSIONE

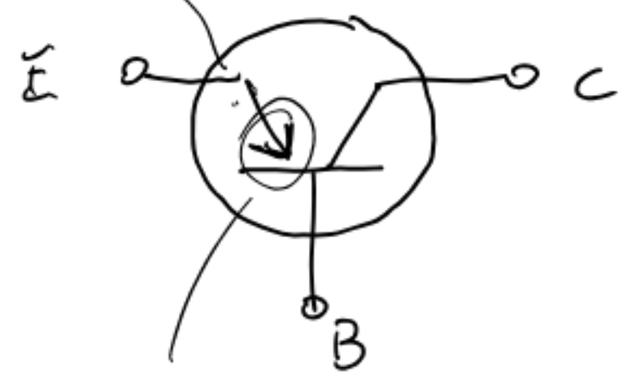
POL. DIR. $V < V_\gamma$



TRANSISTORE A GIUNZIONE

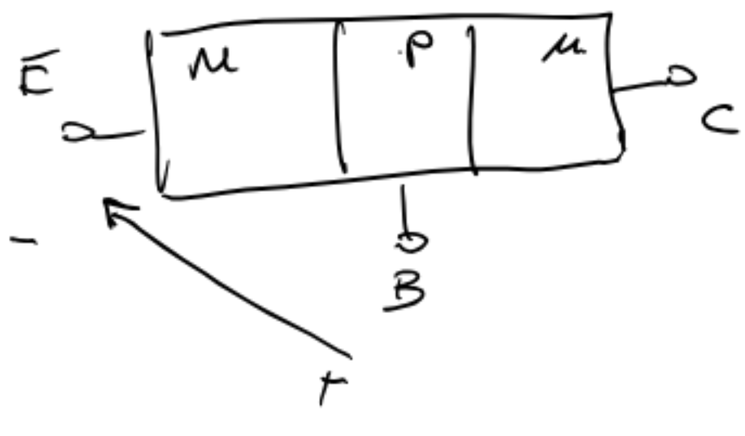
P N P

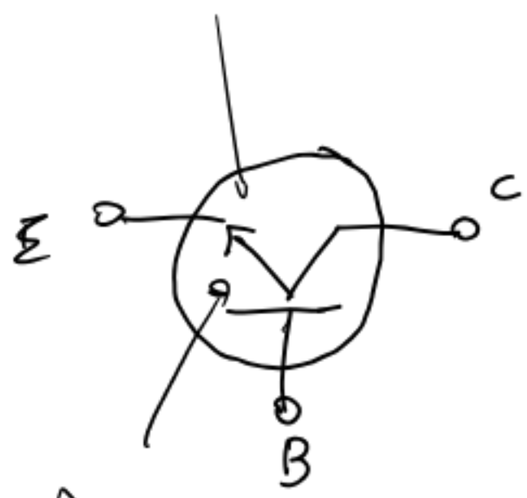




POL. DIR EB

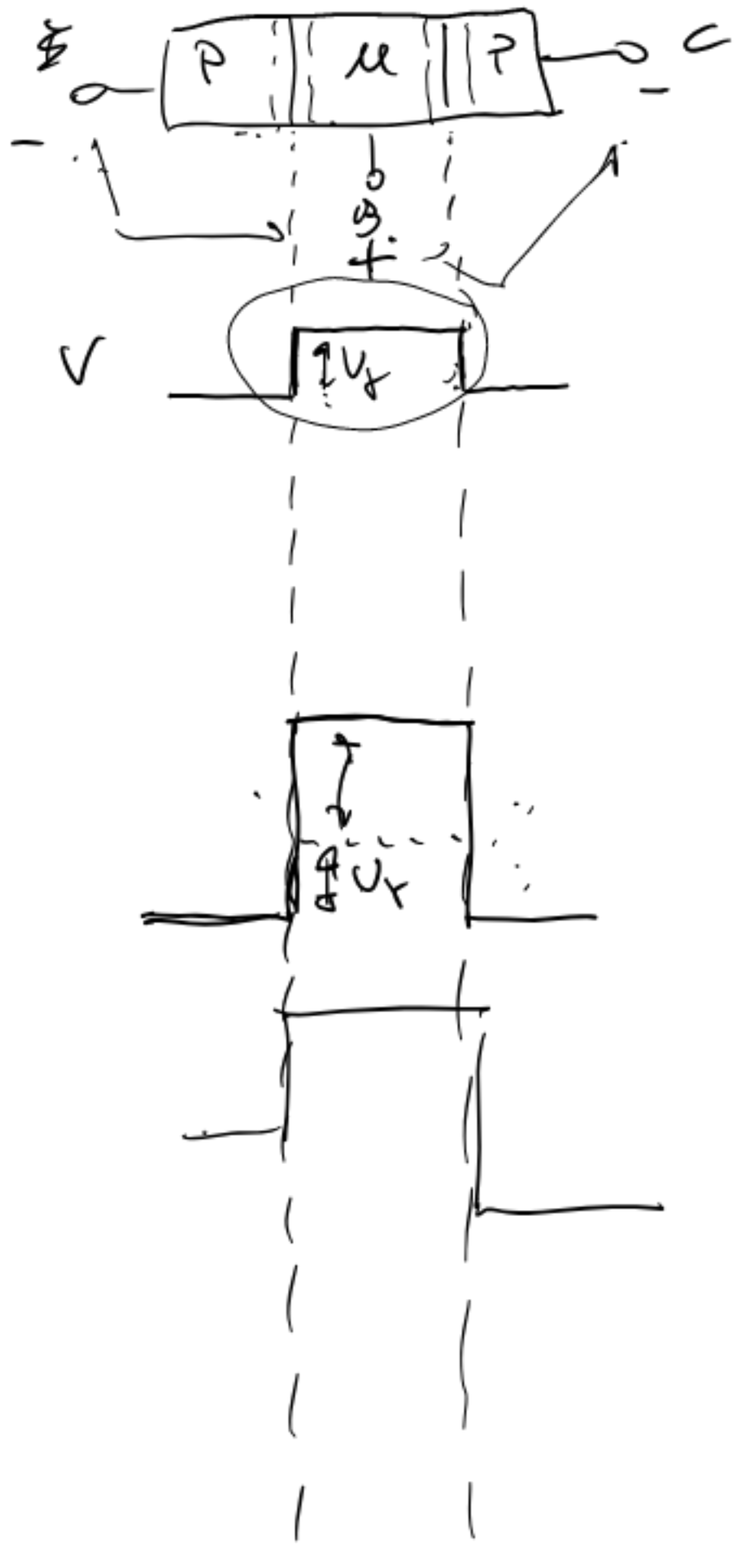
N P N





POL

EB

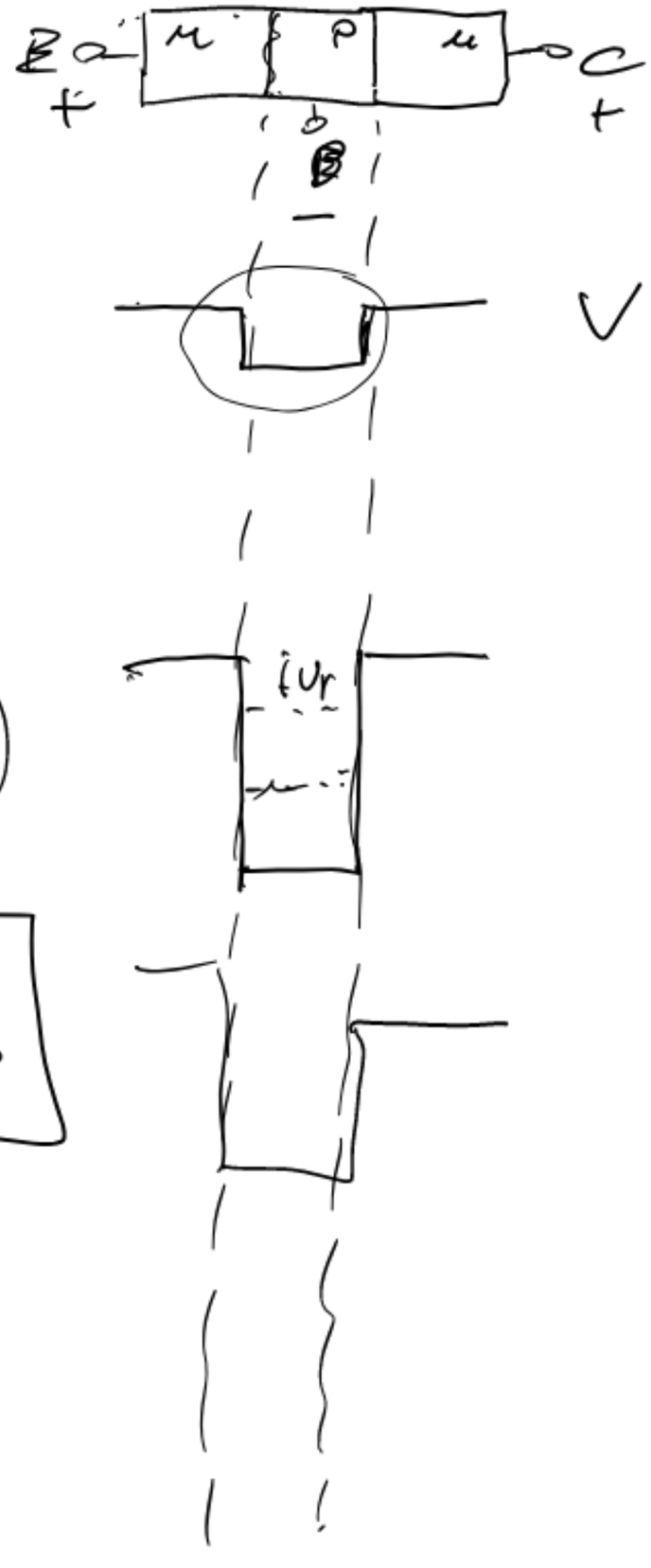


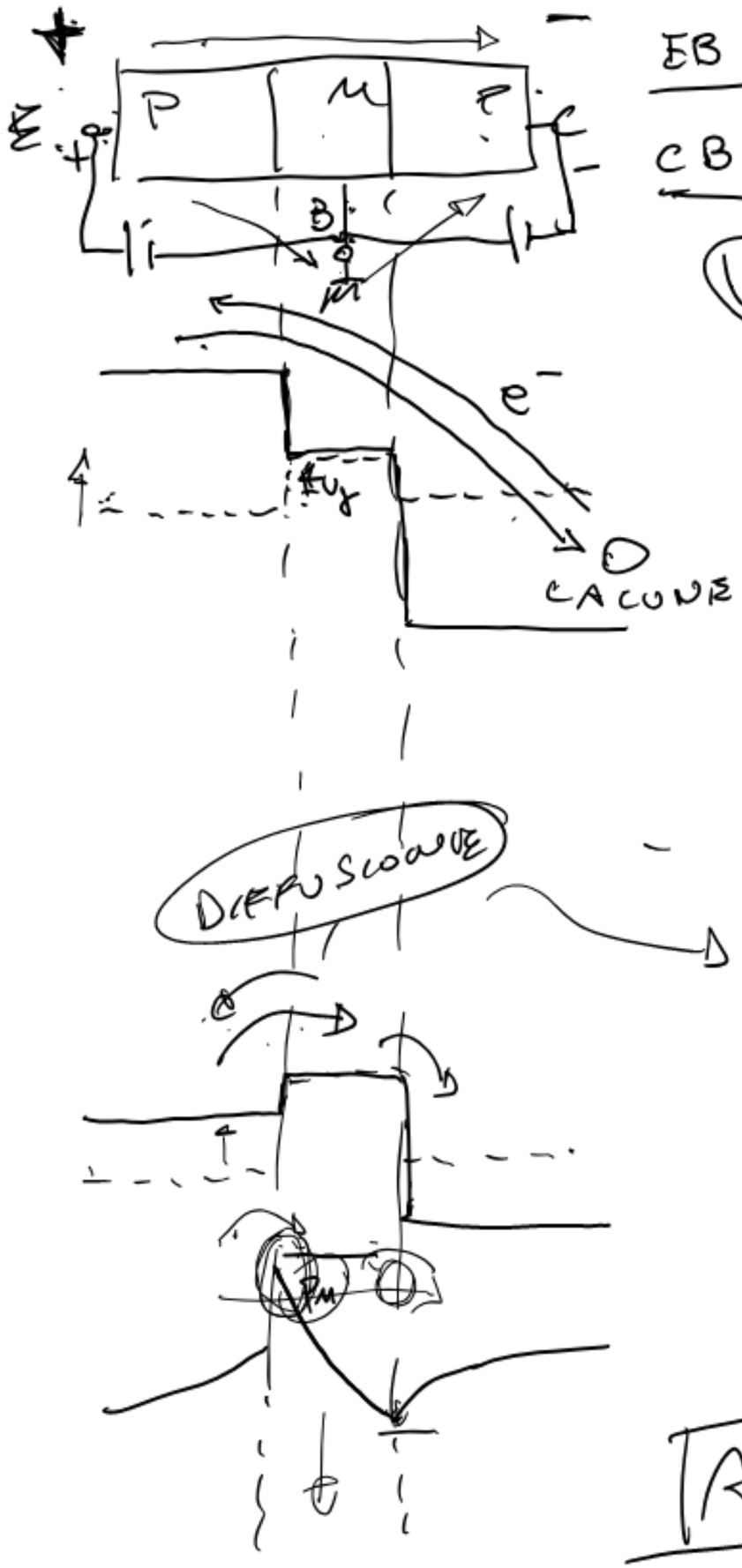
CIRCUITO APERTO

POL. INVERSA BE / BC

NON CIRCOLA CORRENTE

TRANSISTOR INTERDETTO





EB POL. DIRETTA

CB POL. INVERSA

$V \gg V_\gamma$ GRANDI SEGNALI

CONDUZIONE

E → C

ATTIVA

$V \approx V_\gamma$ PICCOLI SEGNALI

DIFFUSIONE → CORRENTE DI DIFFUSIONE

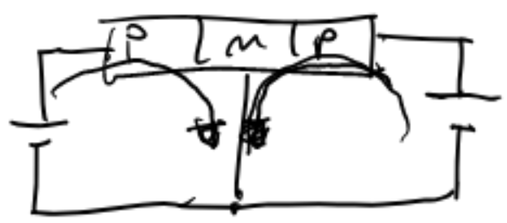
ATTIVA

REGIONE DI SATURAZIONE

POL. ~~INVERSA~~ DIR.

EB POL. DIR.

CB POL DIR.

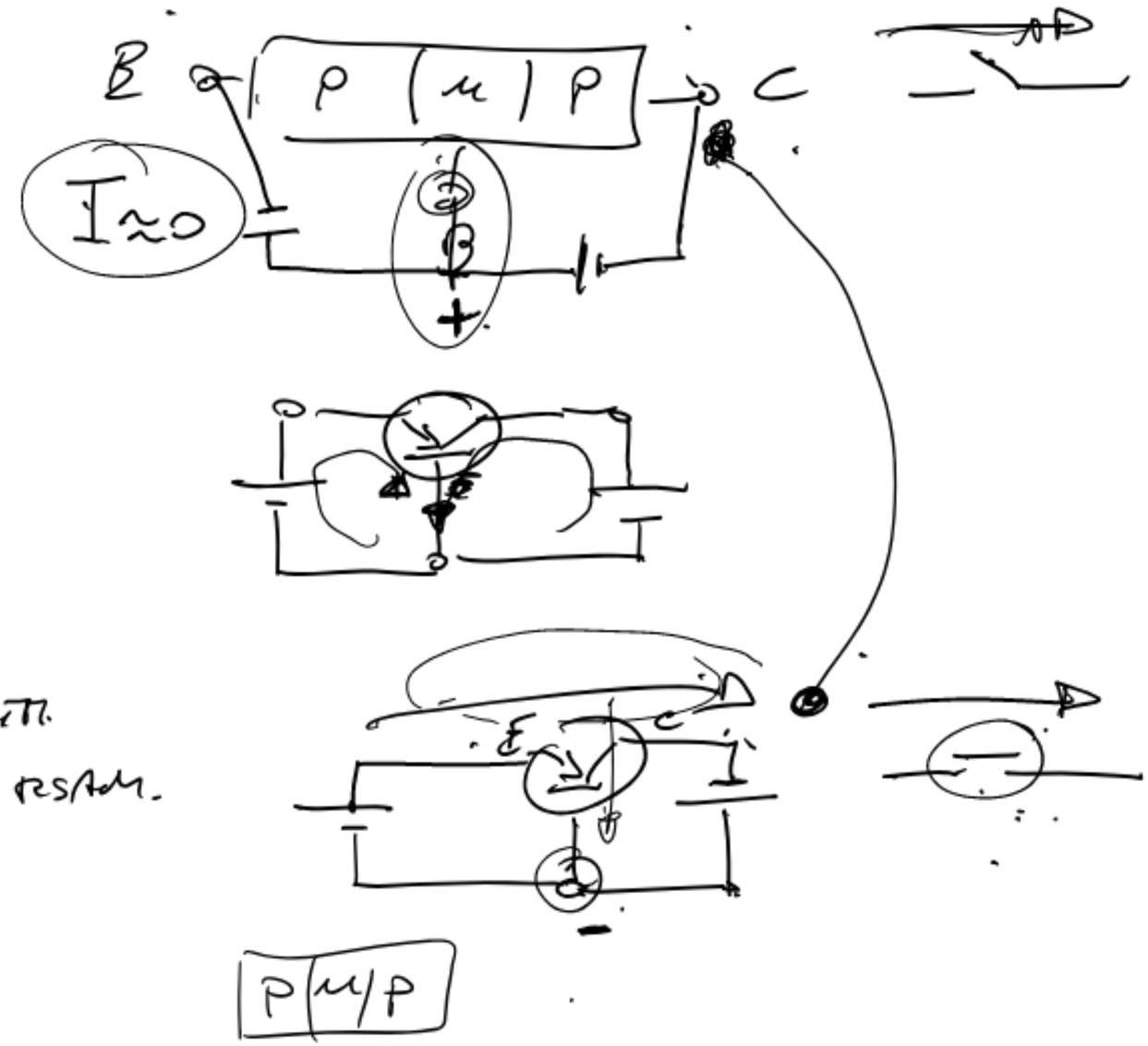


⑥ TRANSISTOR

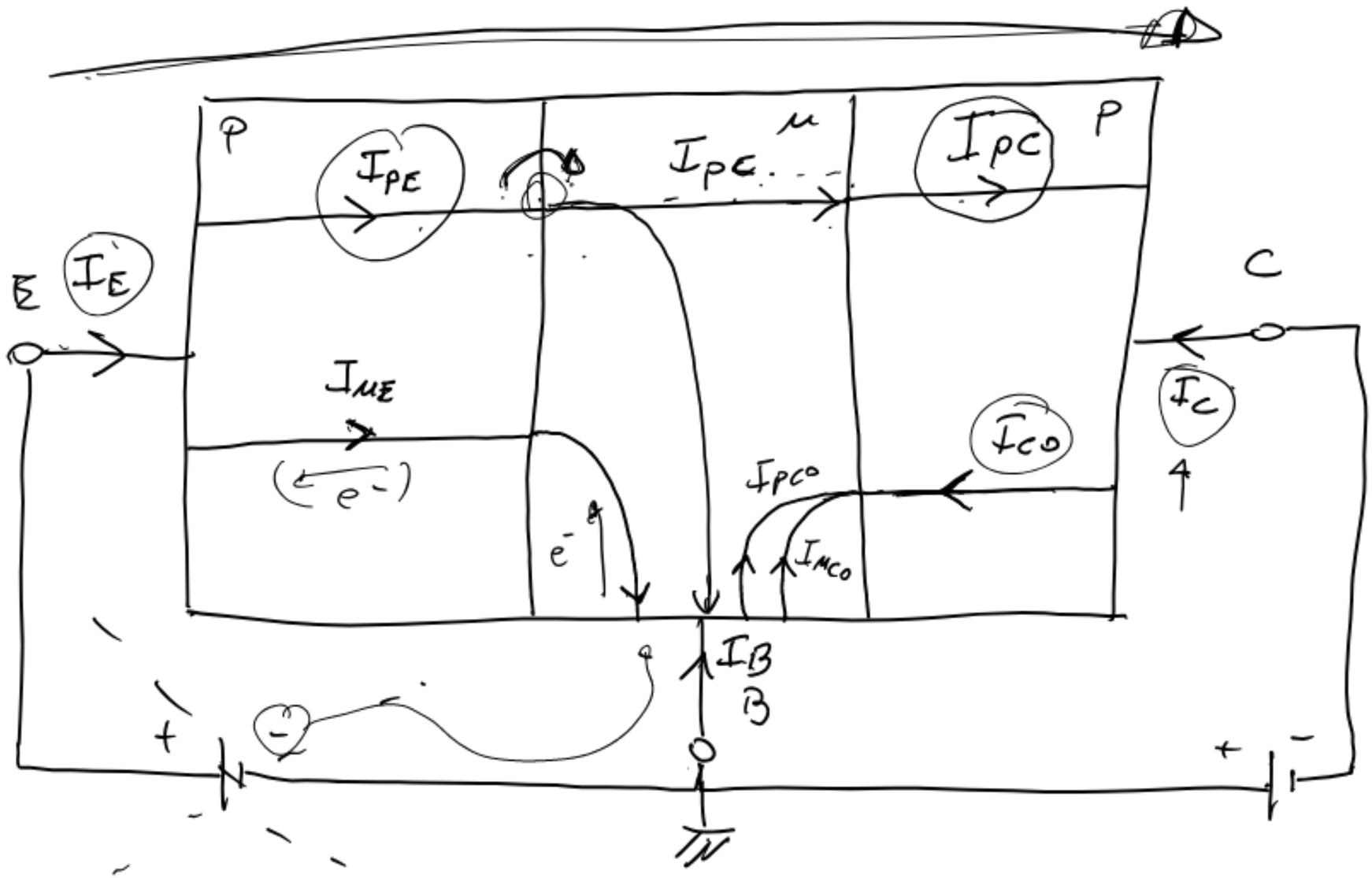
INTERDETTO — EB/CB POL. INVERSAM.

SATURATO — EB/CB DIRETTAMENTE

ATTIVA — EB Pol. DIRETTA
CB " INVERSAM.



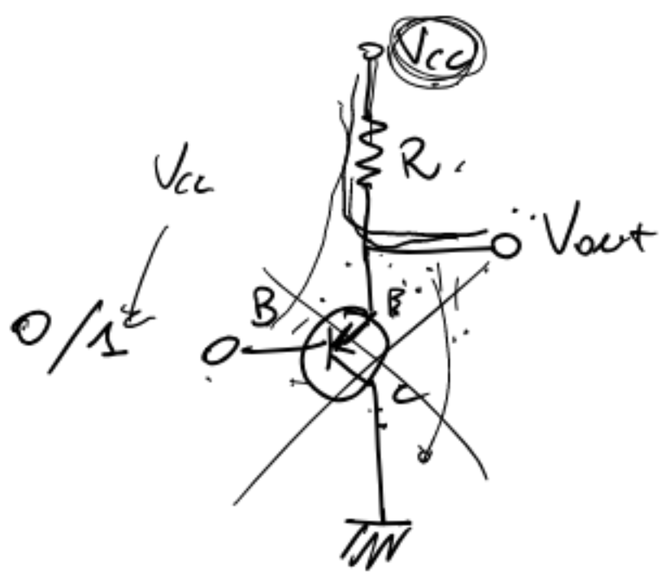
ATTIVA



$$I_{pC} = \alpha I_E \qquad \alpha \simeq 0,90 \div 0,99$$

TRANSISTORE COME INTERRUTTORE

PMP

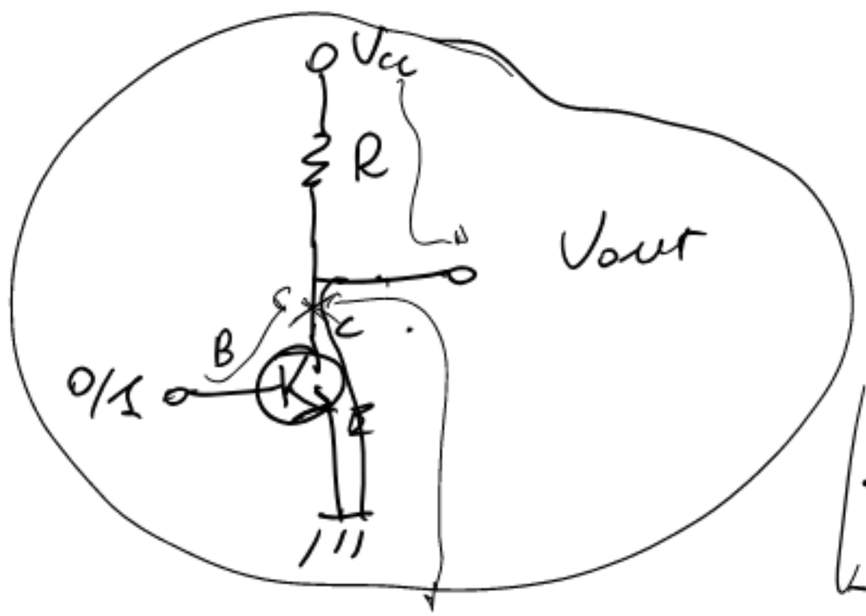


0 → Vout = 0 (ATTIVA)

1 → Vout = Vcc = 1 (INTERDETTO)

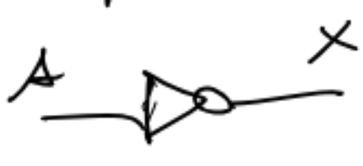
A	X
0	0
1	1

NPN



0 → Vout = Vcc = 1 (INTERDETTO)

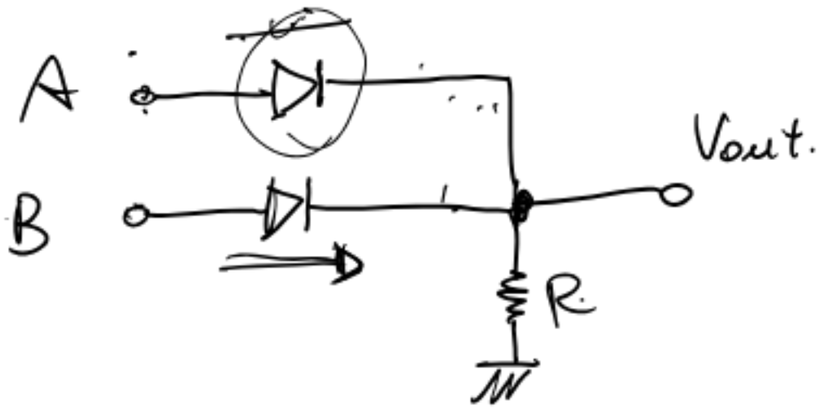
1 → Vout = 0 (CONDUTTO ATTIVA)



A	X
0	1
1	0

PORTA NOT

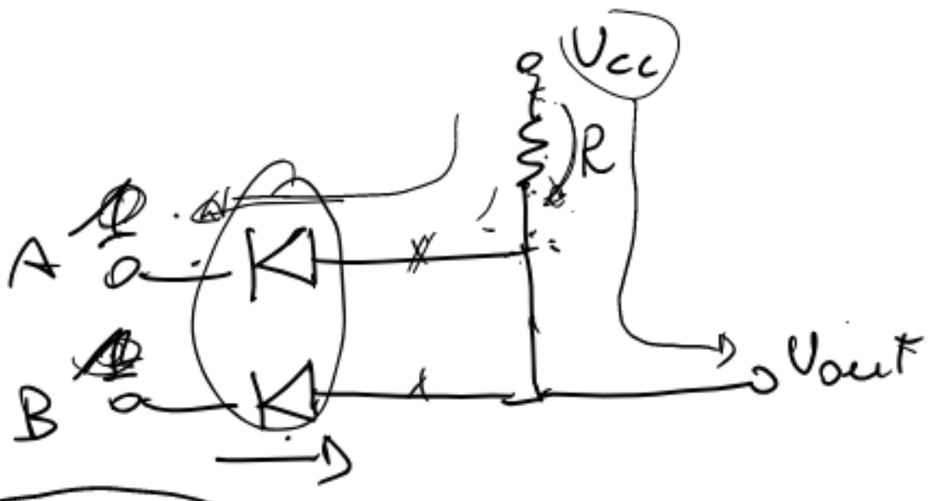
OR con DIODI



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

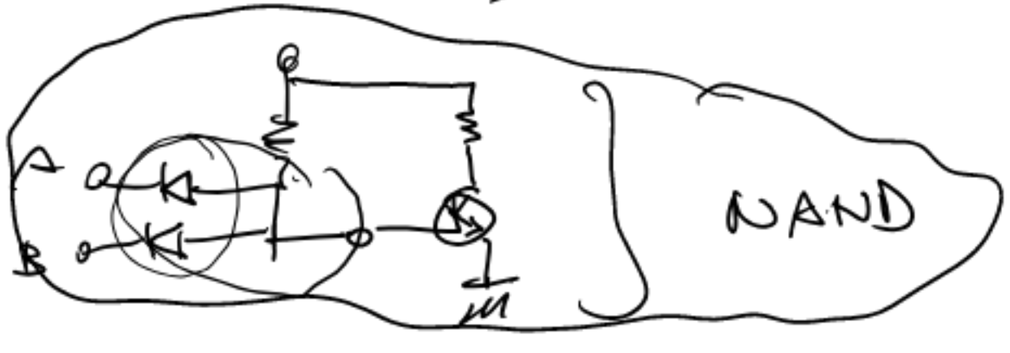
OR

AND con DIODI



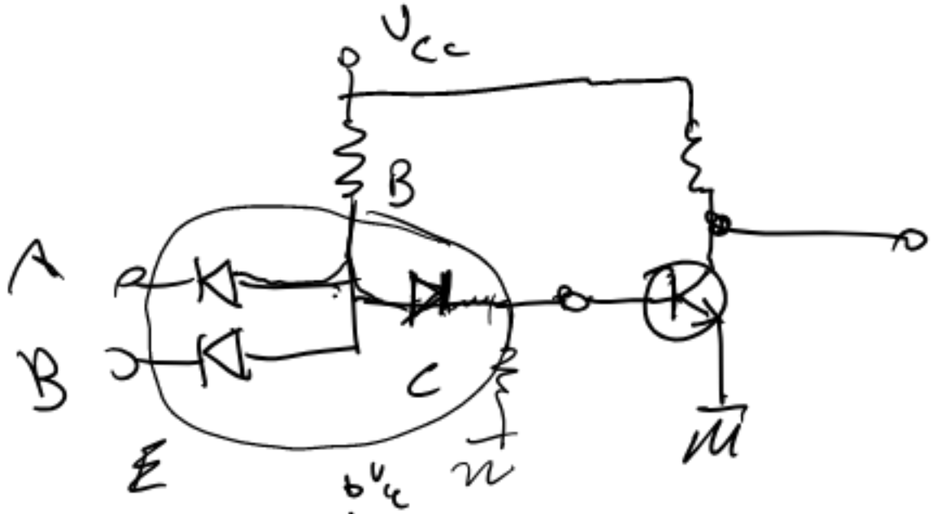
A	B	Vout
0	0	0
0	1	0
1	0	0
1	1	1

AND

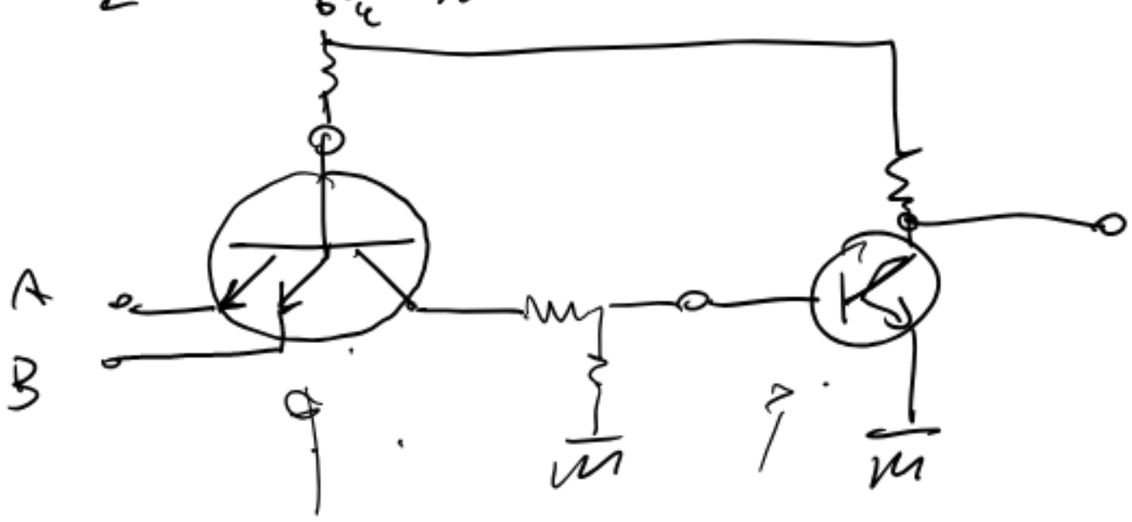


DTL

TTL



DTL



NAND

Diodo
Transistor } tempi commutazione / Ritardo.

Transistor più veloce del Diodo.

NAND TTL

$I_{out} \simeq 20$ (200 mA)

$V = 5\,V$

200 Ω

2 A / 20 A

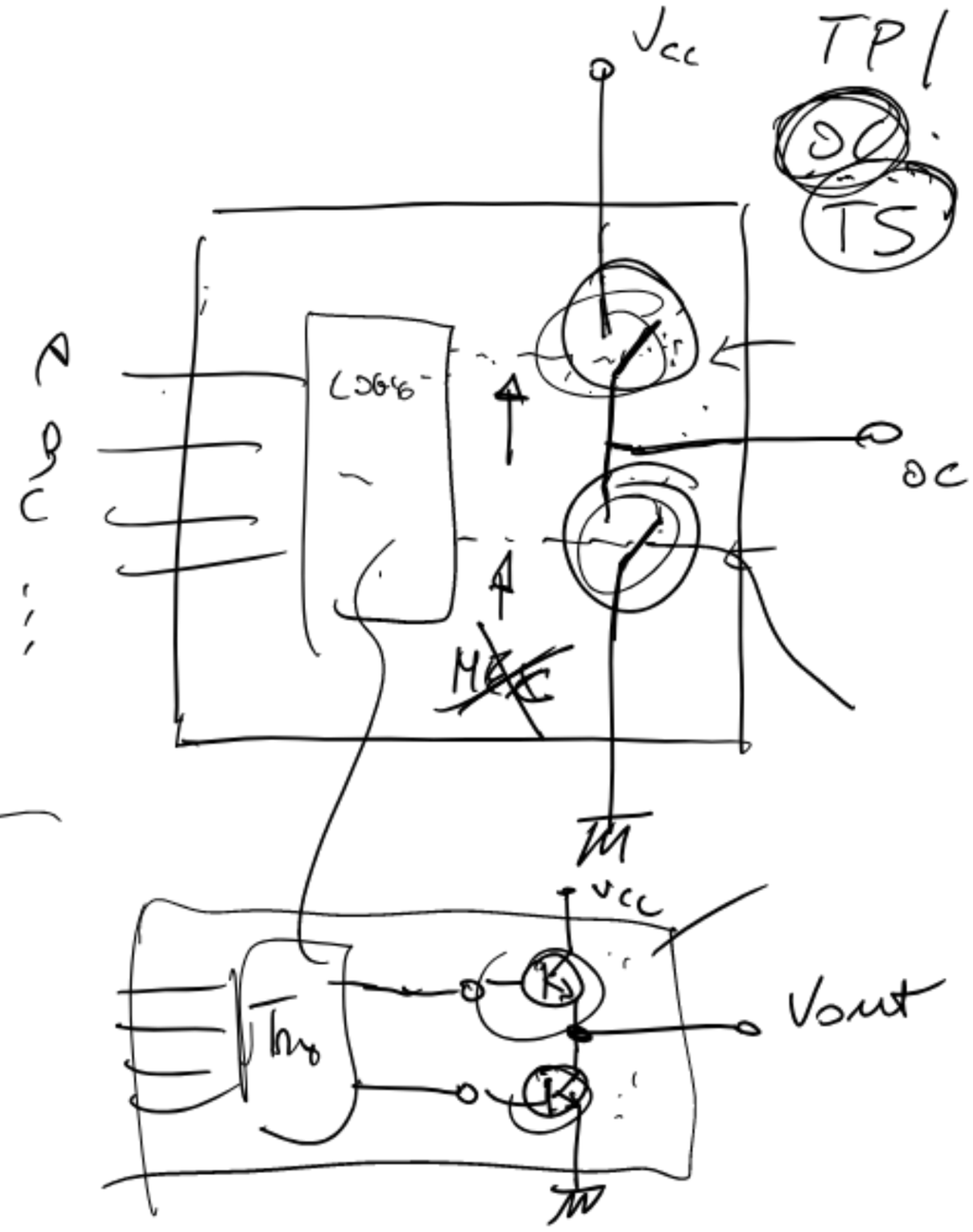
$V_{cc} = 50\,V$

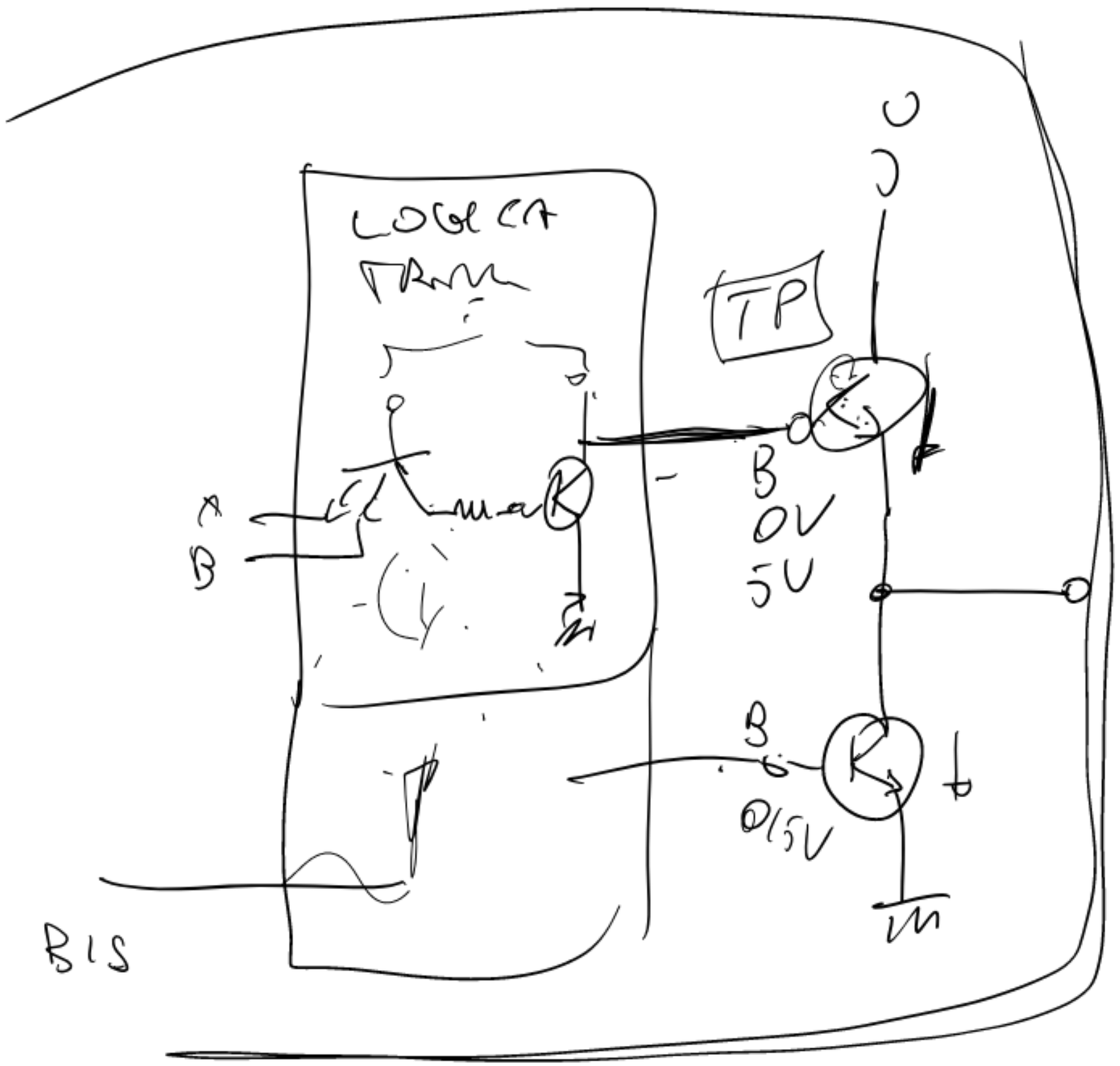
DIG.

ARDUINO

1

Amplificatore




LOGICA
TP
B
0V
5V
B
0,5V
B1S