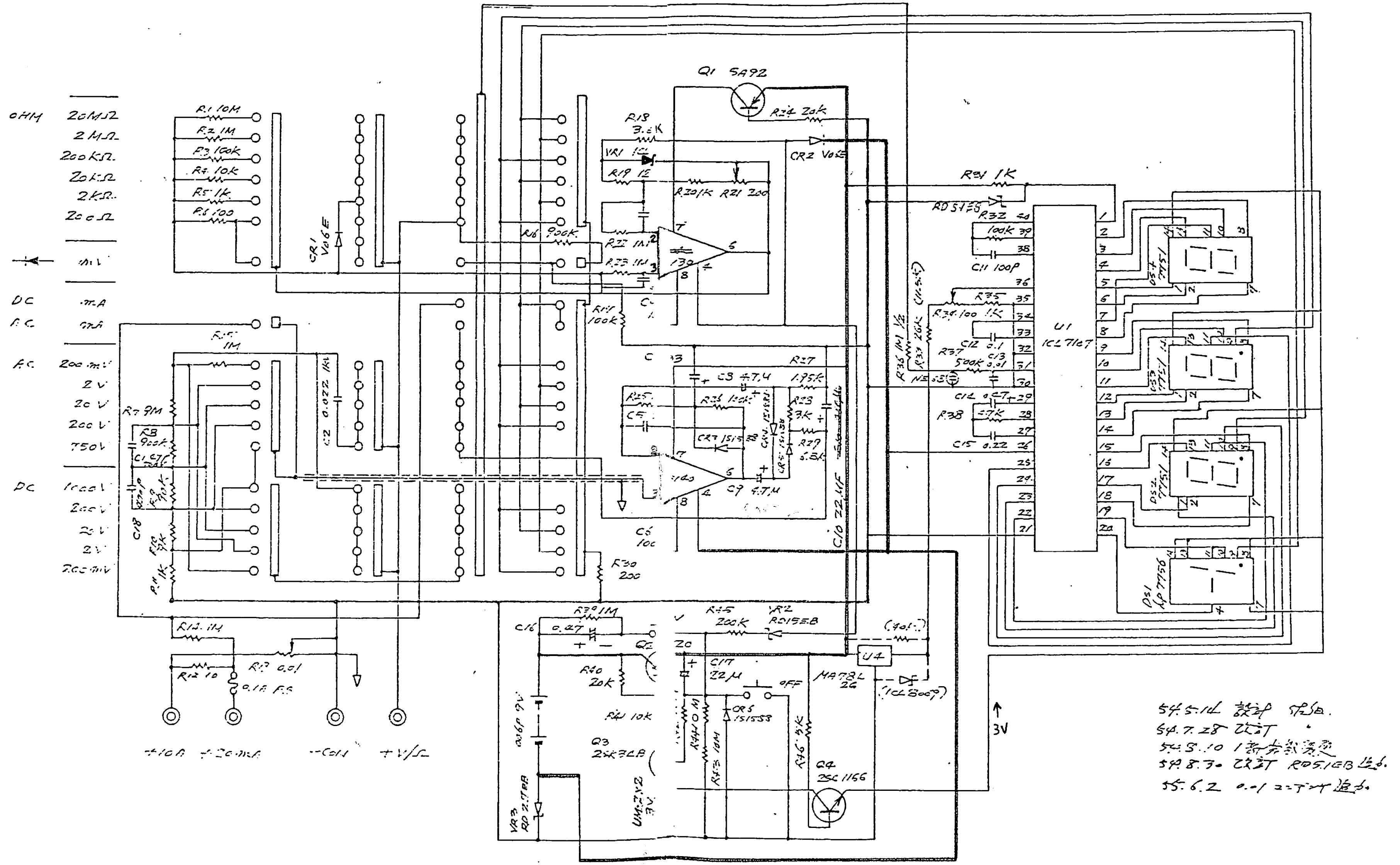
DIGITAL MULTIMETER GR-2100

GR-2100-001



Alignment of "TMK" GR-2100 Digital Multimeter

CONDITION: The battery power must be greater than 2.4V for "A" batteries UM-2 X 2 pieces and 7.2V for "B" battery 006P, and the alignment shall be made at the room temperature 18°C - 28°C.

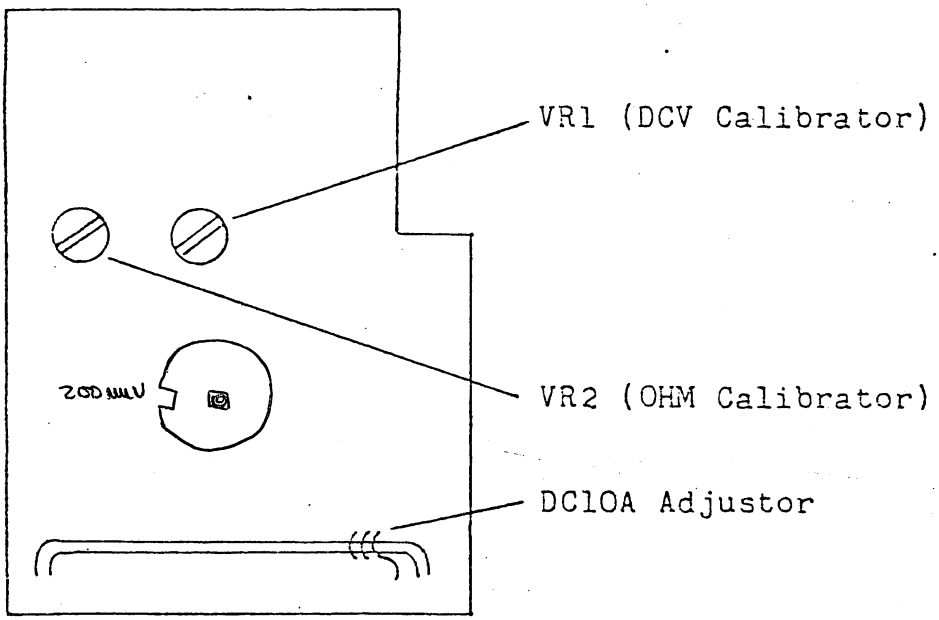
HOW TO MAKE ALIGNMENT:

First, please prepare Standard Measuring Instruments; DC VOLT METER, OHM METER and DC AMPERE METER.

1. With the Standard DC Volt Meter, adjust the digital display of the DC Volt range to read the correct figure by alignment with the VR1 calibrator.

2. With the Standard OHM Meter, adjust the digital display of the OHM range to read the correct figure by alignment with the VR2 calibrator.

3. With the Standard DC Ampere Meter, by connecting the test leads between "-COM" and "10A", adjust the digital display of the DC Ampere range to read the correct figure by alignment with the shunt resistor.



* Battery replacement: When the digital display is irregular or the Auto-Power-Switch functions faster than the regular function time (usually approx. 5 minutes), first please check the voltage of 006P battery. Due to the greater current requirement for 006P battery, the replacement of it is required faster than UM-2 1.5V batteries.

Overload Protection Circuit on "TMK" GR-2100 Digital Multimeter

AC Voltages: On all ranges, the maximum allowable input voltage is DC±1000V or AC750V.
When the voltage higher than the maximum allowable voltage is applied to the unit, the R-36(1Meg ohm) Resistor may be burnt out and in that case, the digital displays "1" even without any input voltage applied to the unit.
When more than 3 times of the maximum allowable voltage is applied to the unit, the NE68 and U1(LSI ICL 7107) may be damaged and in that case, the digital display does not show any indication.

DC Voltages: On all ranges, the maximum allowable input voltage is AC750V or DC±1000V.
When the voltage higher than the maximum allowable input voltage is applied to the unit, C-2(0.022uF) Capacitor may be broken and R-15(1Meg ohm) Resistor may be burnt out, and sometimes IC CA3140 may be damaged.
In that case, the digital display shows only "000" and the unit does not function against any input of voltage.

Resistance and mV: On all ranges, the maximum allowable input voltage is AC and DC 200V.
When the voltage higher than the maximum allowable input voltage is applied to the unit, Q1(SA92) Transistor, CR1, CR2(V06E) Diodes and U2(IC CA3130) may be damaged and sometimes R2-R6 Resistors may be burnt out.
In that case, the unit does not function against any input.

DC Current: On the ranges of AC and DC 20mA, the maximum allowable input current is 0.1A(100mA).
When higher current is applied to the unit, the built-in 0.1A Fuse may be burnt out, and the digital displays "000" and does not function against any input.
On the ranges of AC and DC 10A, the maximum allowable input current is 10Amp.
When higher current is applied to the unit, R13(0.01 ohm) Resistor may be heated though the circuit is not damaged, however when more than 2 times of the maximum allowable input current is applied to the unit, the Resistor may be burnt and it may occur that test leads, PC board, cabinet, etc., are damaged.

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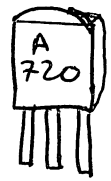
TMK GR-2100

Q1 = SA 92939 (PNP).
Q2 = A 720 (PNP).
Q3 = K 3493 (FET) dóna 0,73V s/2k7Ω
Q4 = { C1116 (desvesades) (NPN) 1/2 pot.
VR1 = Zener 1,25V ICL 8069

A 720-PNP

Q2



hfe = 130

SA 92939-PNP

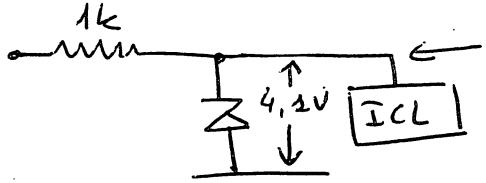
Q1

FET 0,73 V. en el projector (s/2k7)

TRANSISTOR NPN (MC)

PETITS CIRCUITS

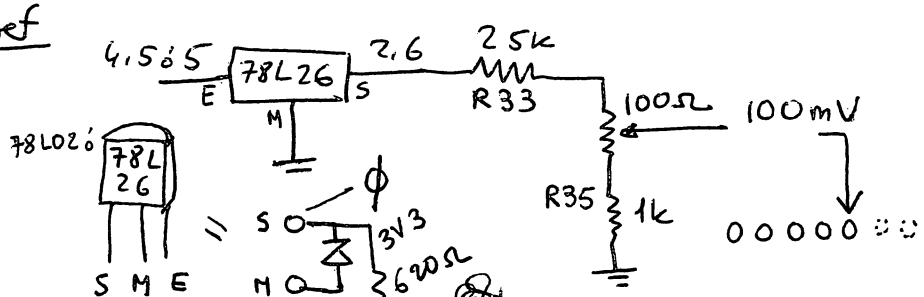
ALIM



← si no li la tensió IC cascat. (tota cau en bornes de la R).

U2: CA3130 (Ω)
U3: CA3140 (VN).

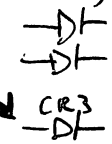
Vref



U1 = ICL 7107
U2 = CA3130 (Ω)
U3 = CA3140 (N)
U4 = { 78L26 (Ref. 2,6V.) 3 pat
78L02

Ω nova } CA3130 cascat. XX (el 741 no vabé, hade ser el 3130 ó 3140)

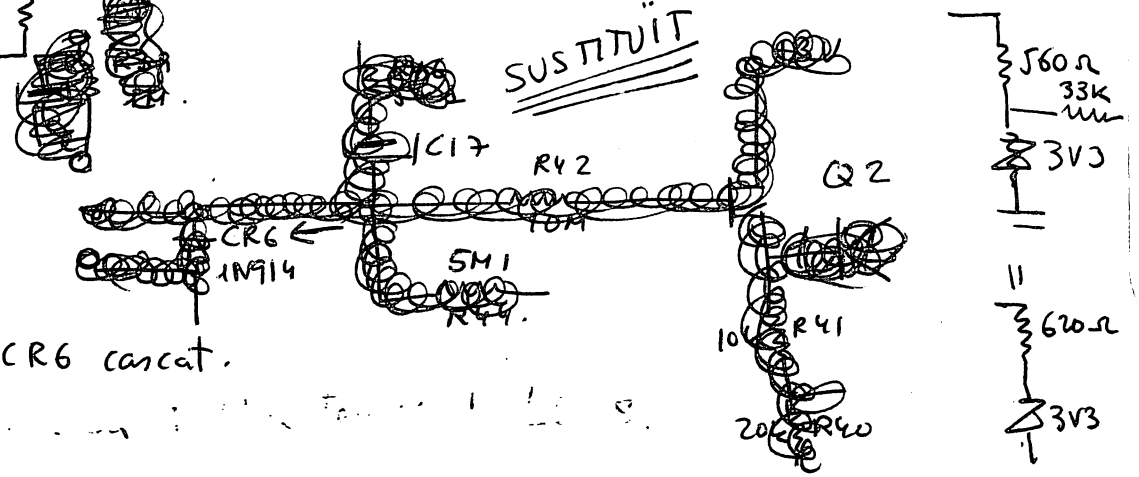
VN marcade — cascat.



VR3: Zener Nom: 2,7
En circuit teoric: 2,2V
En " V.D.

VR2: Zener nom: 15V
Teoric: 14,1V

TEMPOR-INICI



* Si no entra CR6 cascat.

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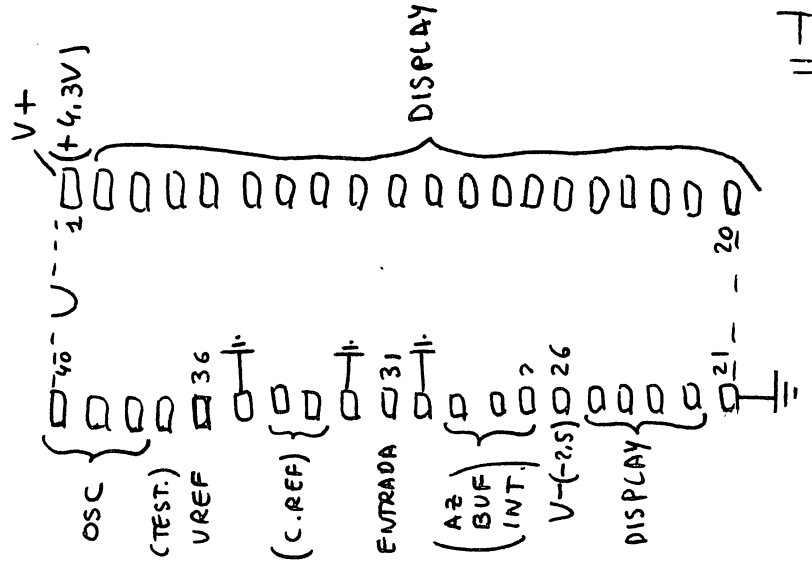
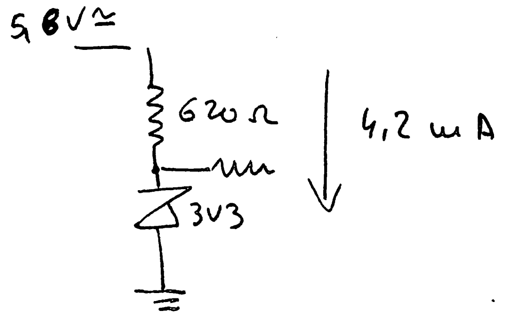
TMK GR-2100



ALERTA
ICL 7107
LED!



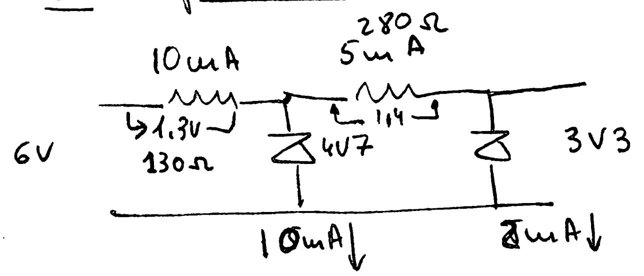
Ademes R33 de 25k

se li posa 33k + 240k = 29K

NOTA amb 33k queda alt i no dona
provar amb 30k.

NOTA 2: Aquest circuit arriba:
comença en 18,88 i acaba en 19,05

una possibilitat futura



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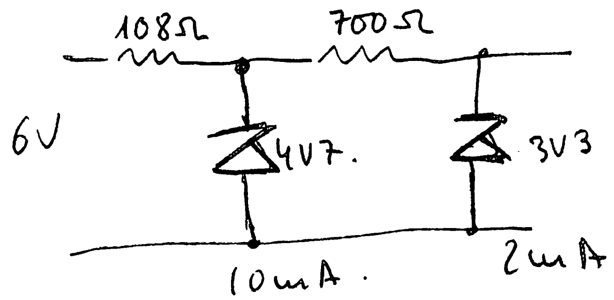
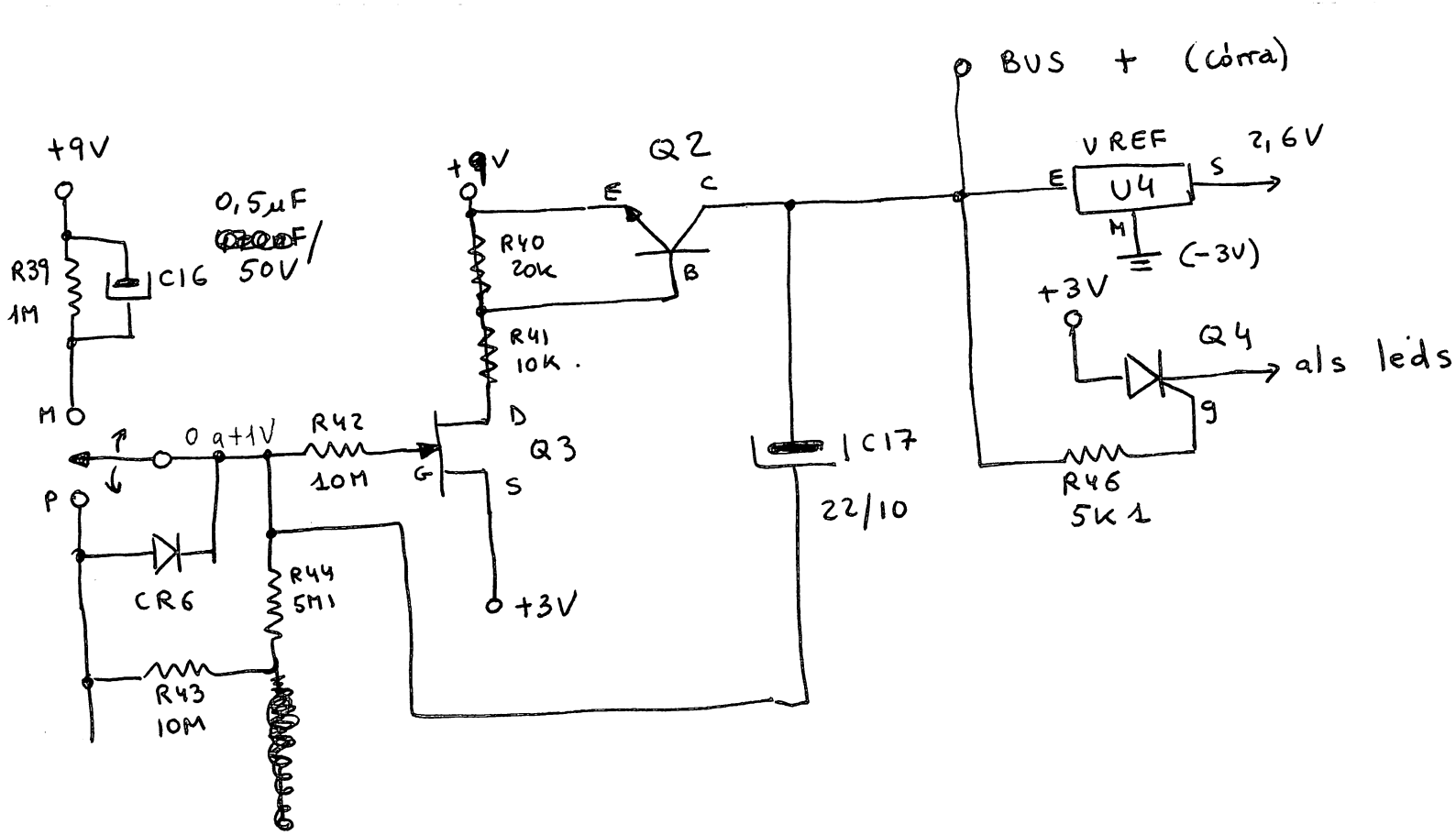
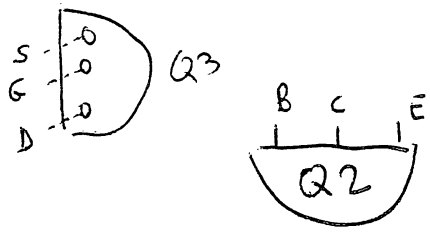




Q1 potser pertanyi a Ω



GR-2100

TMK GR-2100 Averias

Efecto: No enciende
Causa: Diodo 2,7 V cruzado VR3 C sustituido por 3,3 V

E: Ω no va, marca 000

C: Interrado U2 CA3130

E: Ω nova

C: Diodo ICL 8069 mal

E: No enciende números

C: Falta V+, "amorrada" por un cruce: EL CA3140 cruzado y se comía la tensión

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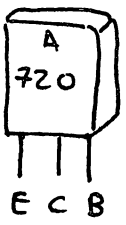
Q 1 : "Ω"

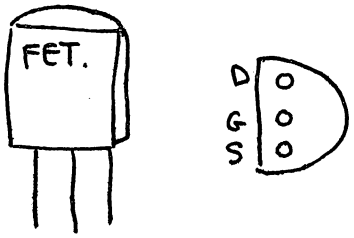
SA 92939
"PNP"

Q 2 : "ENGEGAR"



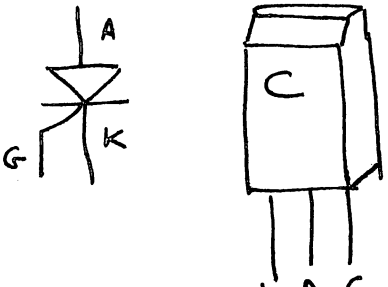
A-720
"PNP"

Q 3 "ENGEGAR "I.C"



K 34XX
"FET"

Q 4 "ENGEGAR LEDS"



"TIRISTOR"

C 116
C 122
C 1166

U-4

Reg. Volt.