

DEVICES OF PERCEPTION

ELECTRONICS

SORAYYA

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SUMMER 2014

BAUHAUS UNIVERSTIY

IMPORTANT THINGS YOU NEED TO KNOW.

→ THE ELECTRICITY WILL MOVE THROUGH WIRES (METAL INSIDE WIRES)

→ MULTIMETER .)) CONTINUITY.

REFERENCES:

FOREST M. Mims III : AUTHOR
R

1. GETTING STARTED IN ELECTRONICS: NAME
2. MAKE ELECTRONICS.

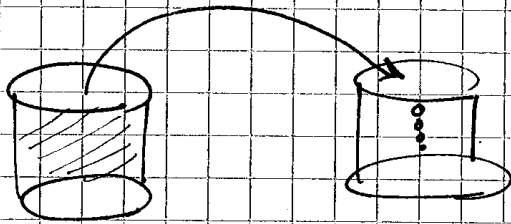
⋮

→ THE BATTERY HAS 9V.

V \dots	DC	→ 9V
V \sim	AC	→ 5

} 9V
-9V

POWER SUPPLIES.

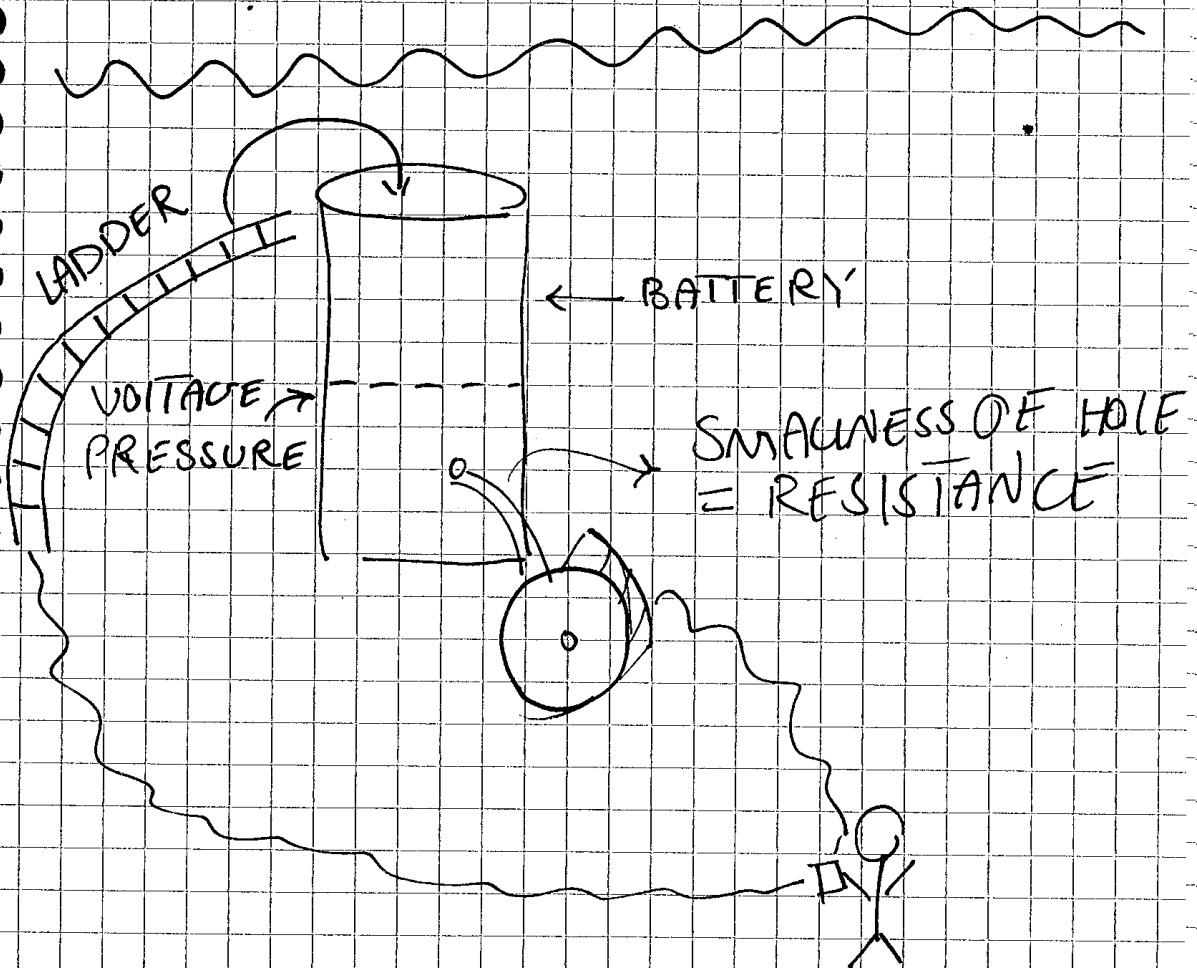


FULL ONE

EMPTY ONE

HINT: NEVER PUT YOUR BATTERY IN YOUR PACKET IF YOU HAVE COINS IN IT.

WHY? \Rightarrow SHORT CIRCUIT.




⌋ + RED CABLE
⌋ - BLACK CABLE

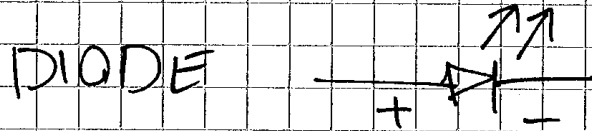
⌋ M — ⇒ NORTH AMERICA ✓
⌋ □ — ⇒ EUROPE

RESISTANCE:

1KΩ (BR, BLK, RED)
10KΩ (BR, BLK, ORANGE)
100KΩ (BR, BLK, YELLOW)
1MEΩ (BR, BLK, GREEN)

CAPACITORS: (FARRAD) 

MF	MICRO	FARRAD.
PF	PICO	FARRAD.
NF	NANO	FARRAD.



LED: LIGHT EMITTING DIODE
(THE FLAT PART IN LED = NEGATIVE PART)

TERMINAL:

↓ VARIABLE RESISTANCE

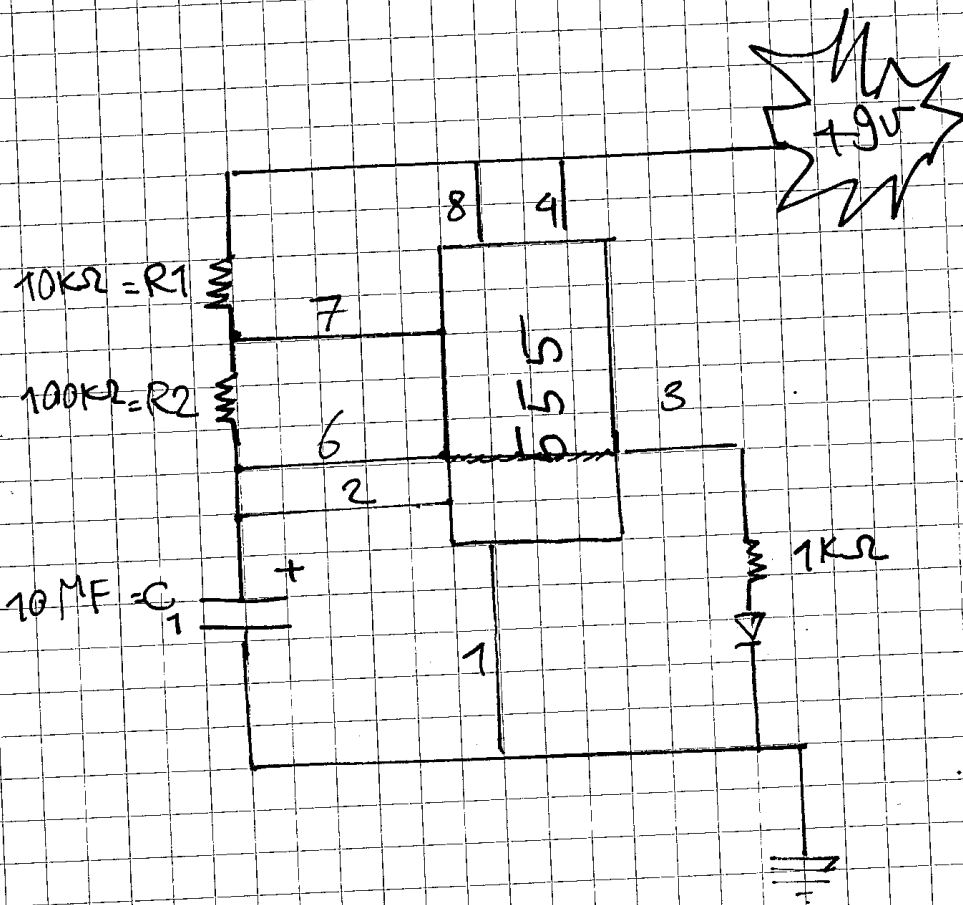
POTENTIOMETER RESISTANCE

PHOTO CELL = LIGHT DEPENDENT RESISTOR (VTR) (LDR)

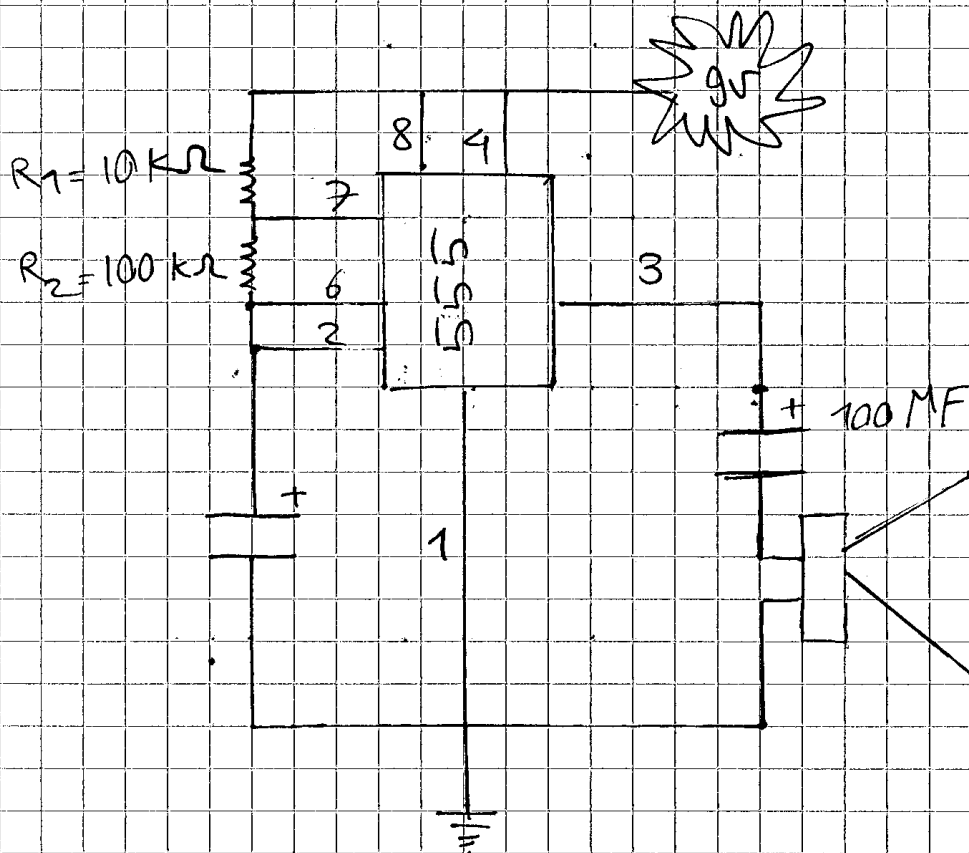
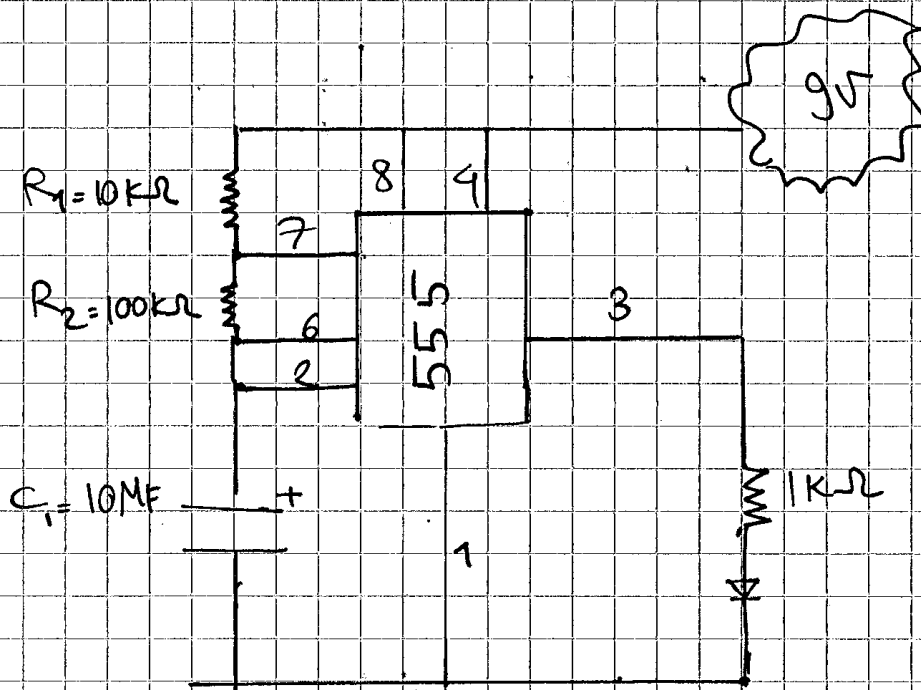


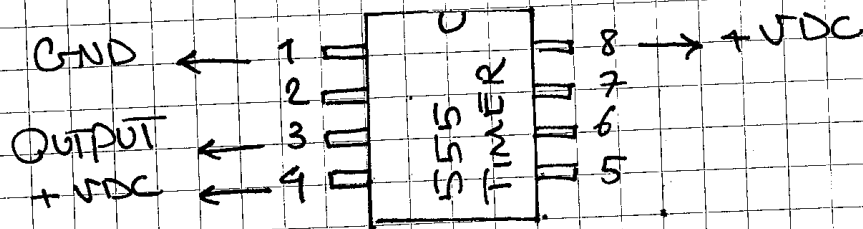
555 TIMER

A STABLE MODE

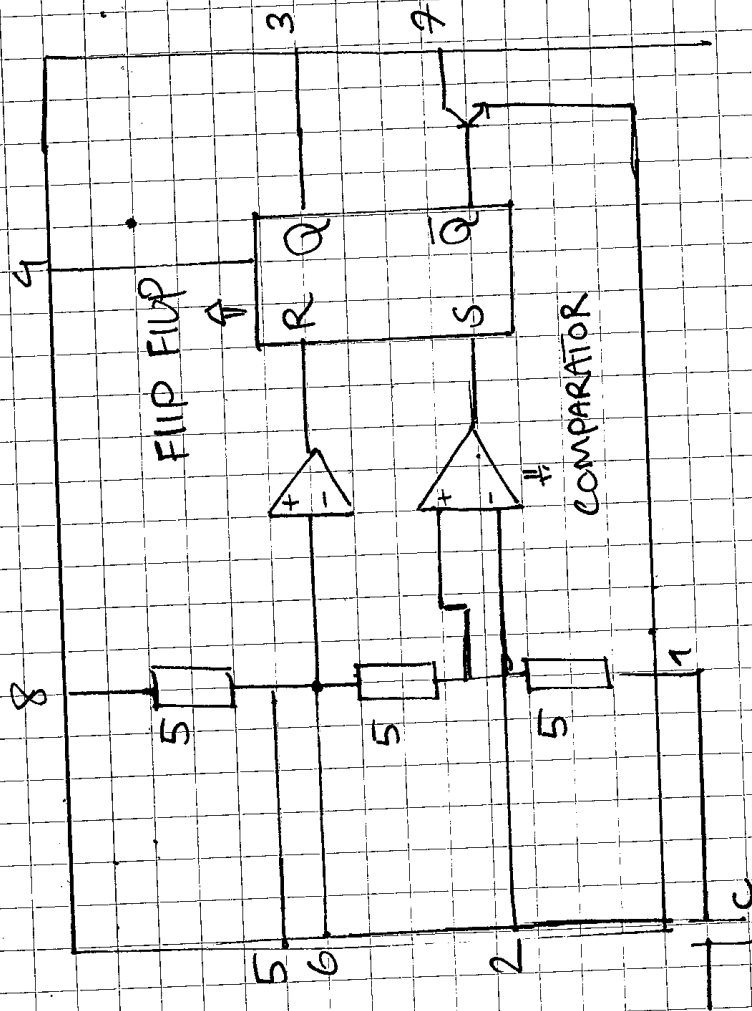


555 TIMER (ASTABLE MODE)





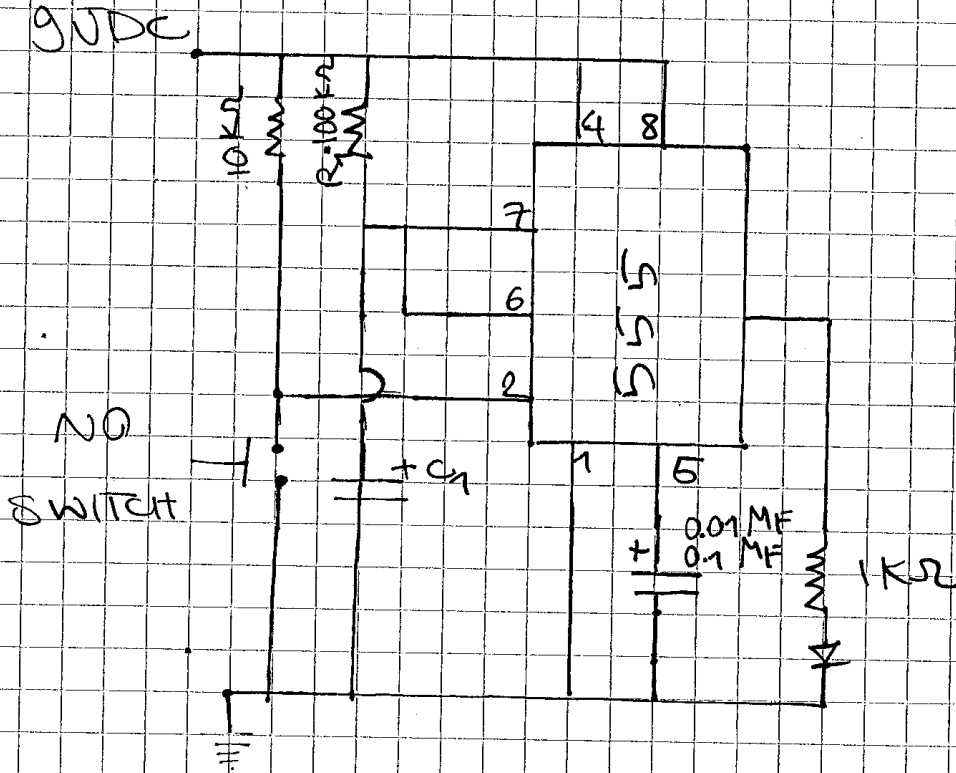
LOGICAL LANGUAGE 555 TIMER.



555-TIMER

MONO STABLE

MODE ONE SHOT



NO NORMALLY OPEN

NC NORMALLY CLOSED

CAPACITORS AND RESISTORS:

$$C = C_1 + C_2 + C_3 + \dots \Rightarrow \text{PARALLEL}$$

$$\frac{1}{C} = \frac{1}{C_1} + \frac{1}{C_2} + \dots \Rightarrow \text{SERIES}$$

$$R = R_1 + R_2 + R_3 + \dots \Rightarrow \text{SERIES}$$

$$\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2} + \dots \Rightarrow \text{PARALLEL}$$

SWITCHES



MONOSTABLE

VR

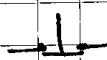


ASTABLE

MOMENTARY SWITCHES:



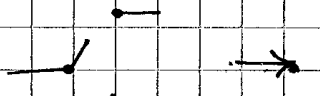
NORM OPEN



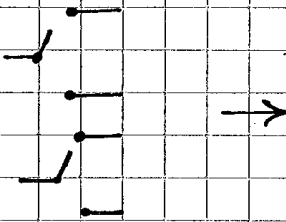
NORM CLOSED



SINGLE POLE
SINGLE THROW (SPST)

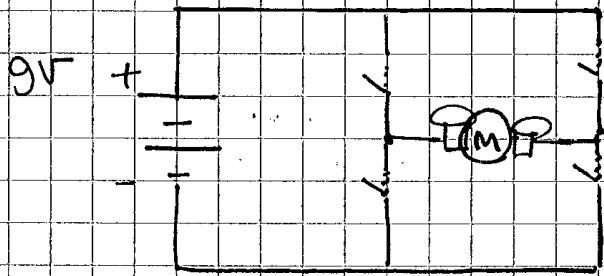


SINGLE POLE
DOUBLE THROW (SPDT)

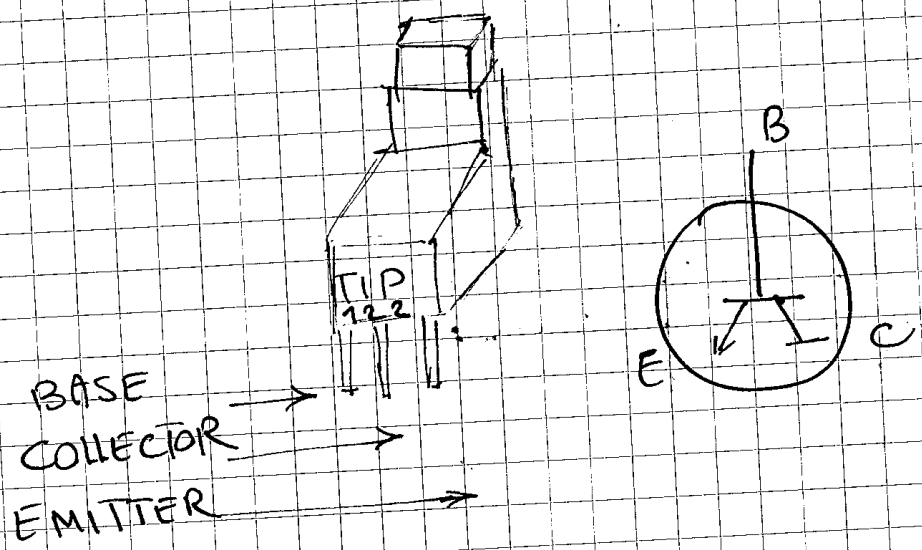
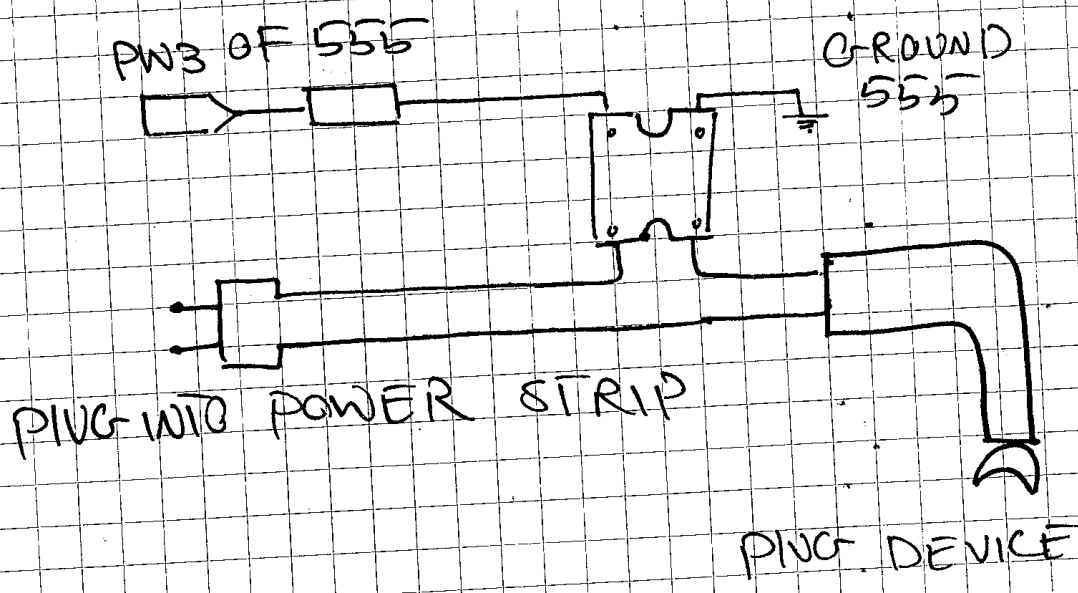


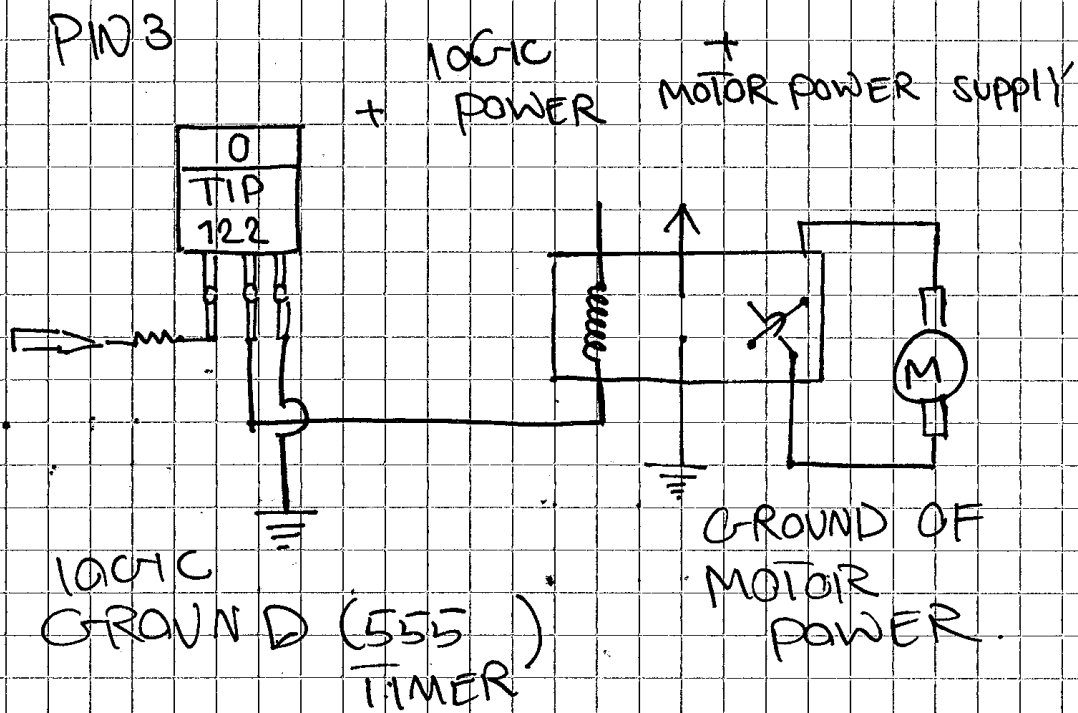
DOUBLE POLE
DOUBLE THROW (DPDT)

H-BRIDGE



SOLID STATE RELAY

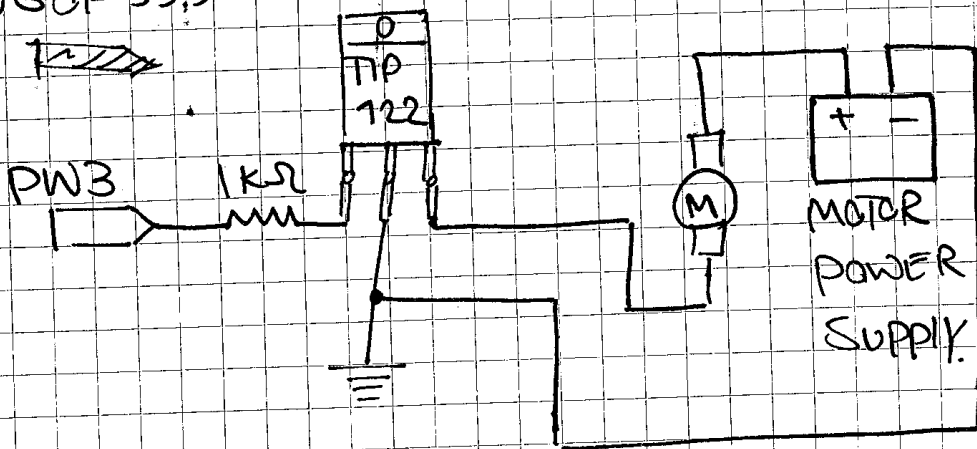




SCHEMATIC FOR DPDT
 RELAY PART NO.
 KS2E-M-DC5
 (YELLOW RELAY)

555 TIMER AND (TRANSISTOR)
TO TURN ON AND (TIP 122)
OFF A MOTOR.

PW3 OF 555.



ASSIGNMENT 1 : 27. JUNE. 2014.

TECHNOLOGY LIKES DEMOCRACY!

TECHNOLOGY CHANGES DEMOCRACY!

CONCEPTUAL SWITCH.

REED SWITCH AND
MAGNET!

WHAT IS REED SWITCH?

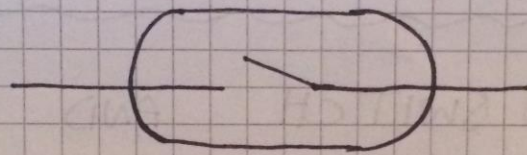
THE REED SWITCH IS AN ELECTRONIC SWITCH
OPERATED BY AN APPLIED MAGNETIC FIELD.
IT WAS INVENTED IN 1936 BY W.B. ELLWOOD.

WHAT DOES IT CONSIST?

IT CONSISTS OF A PAIR OF CONTACTS ON
FERROUS METAL REEDS IN A

HERMETICALLY SEALED GLASS ENVELOPE.

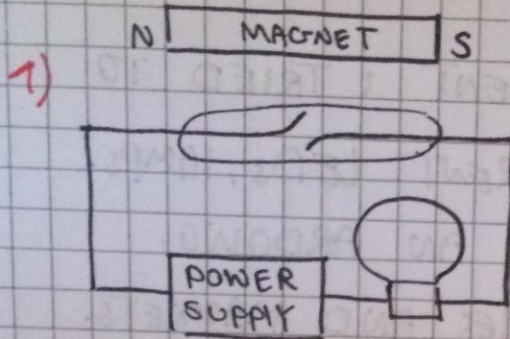
THE CONTACTS MAY BE NORMALLY OPEN.
CLOSING WHEN A MAGNETIC FIELD IS
PRESENT (OR) NORMALLY CLOSED AND
OPENING WHEN A MAGNETIC FIELD IS
APPLIED.



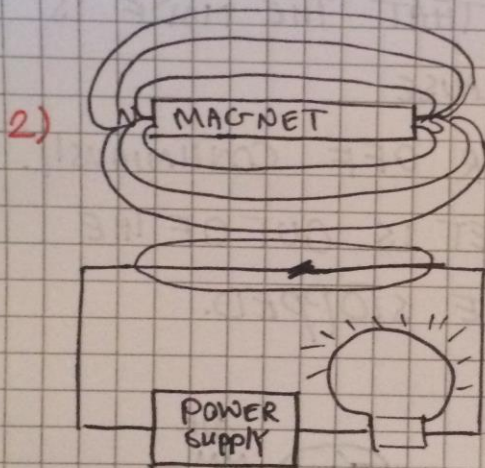
CIRCUIT SYMBOL

A VERY COMMON EXAMPLE OF A
RS' APPLICATION IS TO DETECT THE OPENING
OF A DOOR, WHEN USED AS A PROXIMITY
SWITCH FOR A BURGLAR ALARM.

REED SWITCH MORE INTO DETAIL:



THE LAMP IS
OFF!



WHEN THE MAGNET
PASSES THROUGH THE
REED SWITCH,
MAKES THE LAMP
ON!

MY PROJECT ...

⇒ IN THIS ASSIGNMENT I TRIED TO TURN ON DIFFERENT LEDs, LAMPS. ON A BOARD, USING AN ARDUINO, TWO REED SWITCHES AND MAGNETS. WE CAN ASSUME THAT THE MODE IS MONO STABLE: BECAUSE

- 1) IT IS NOT ON OR OFF CONTINUOUSLY.
- 2) WHEN THE MAGNET IS OUT OF THE FIELD, IT WILL BE STOPPED.

