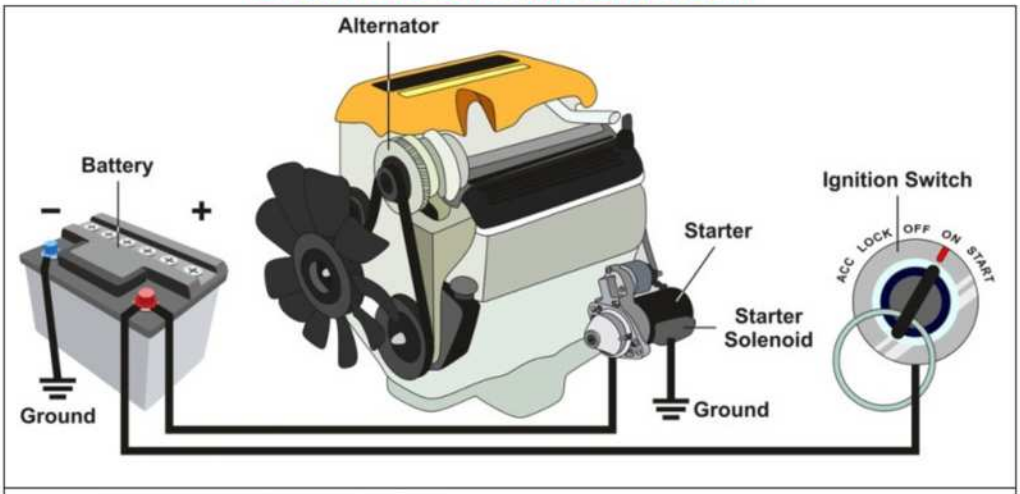
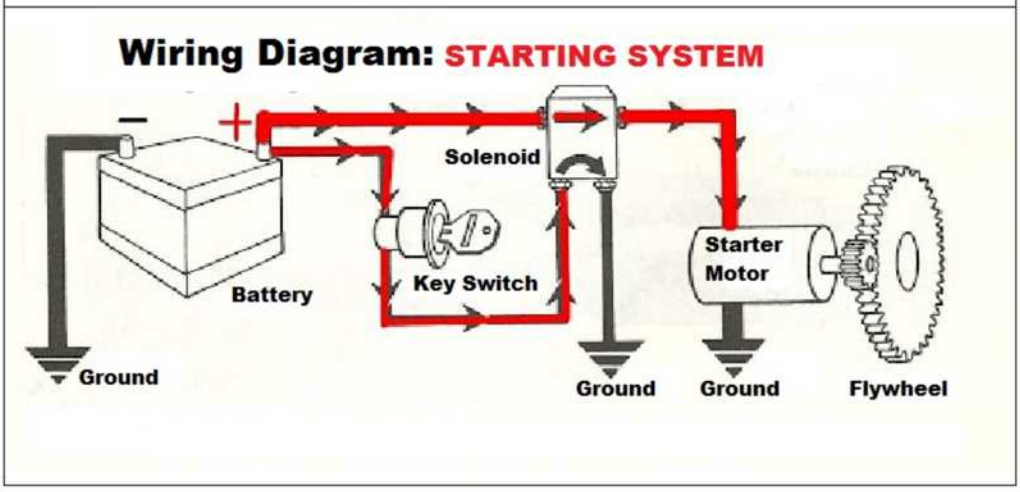
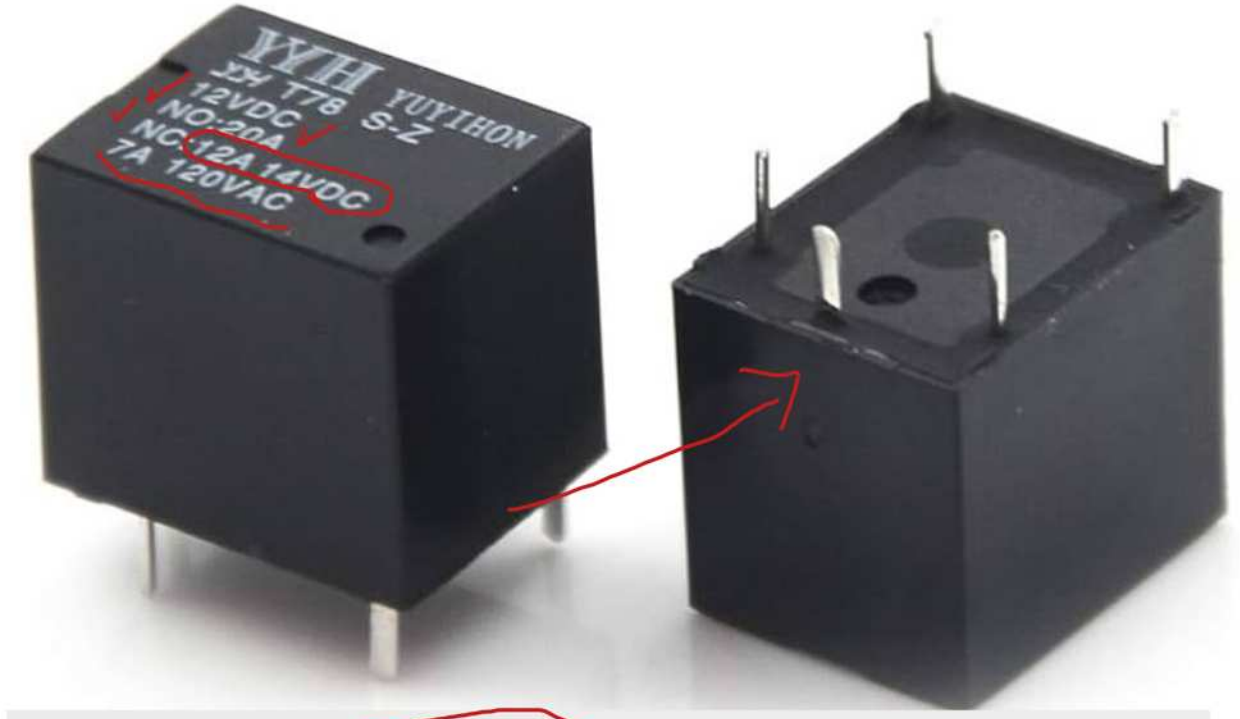
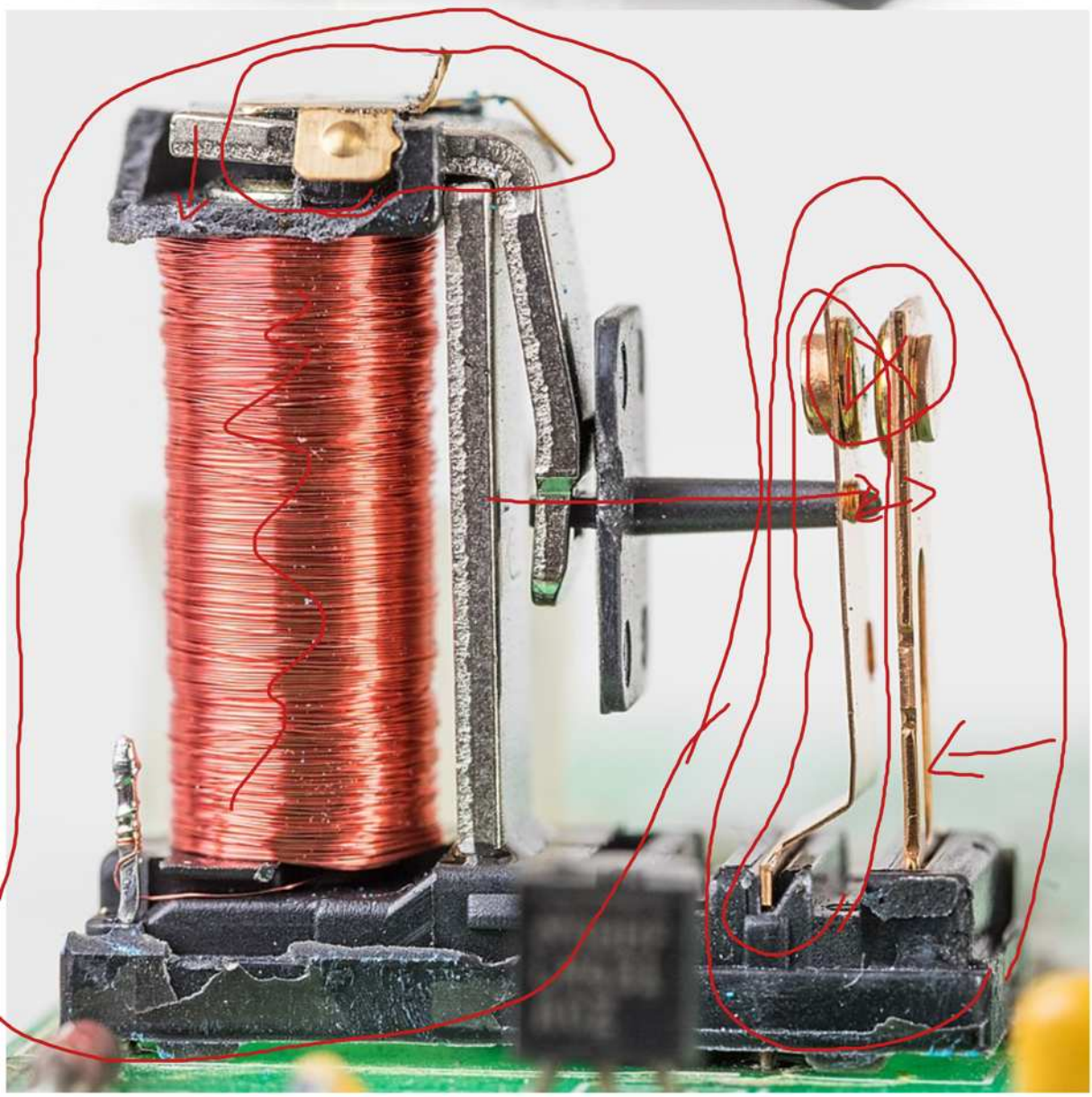
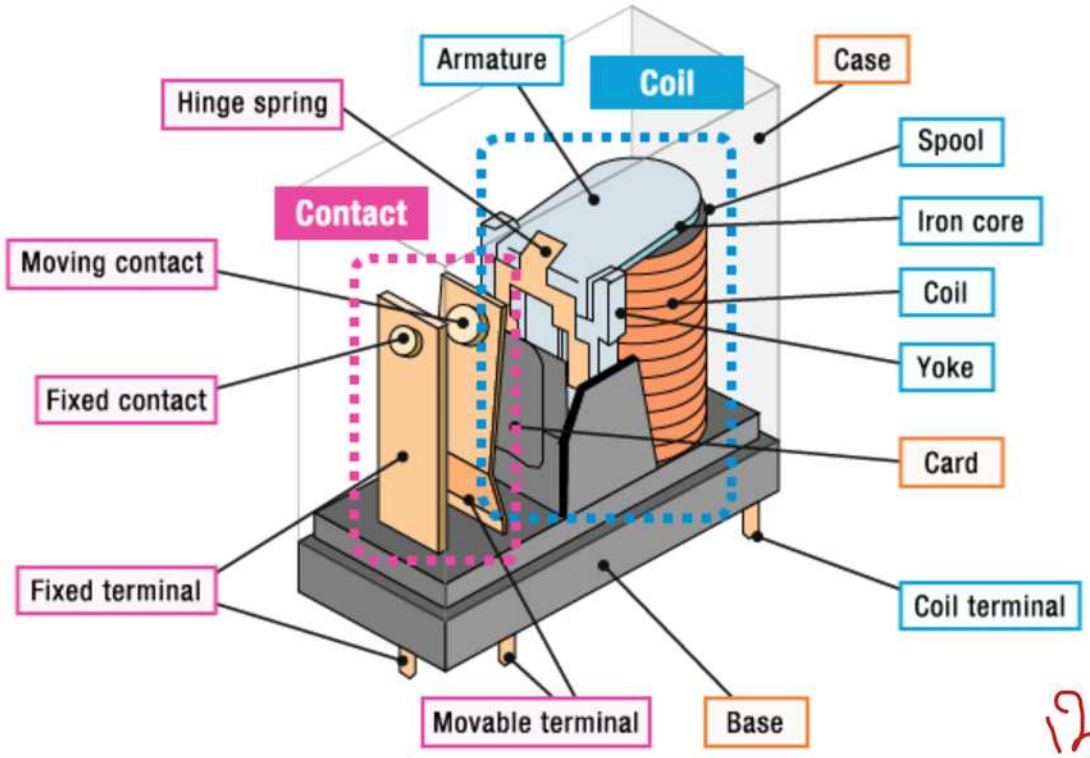
STARTING SYSTEM DIAGRAM

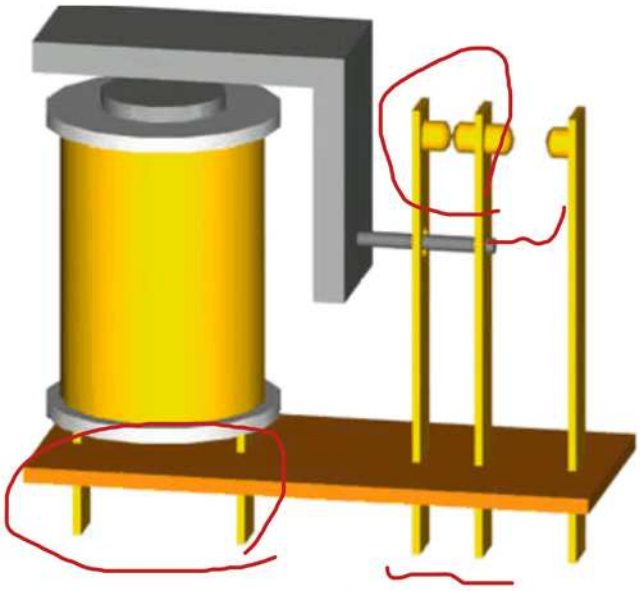




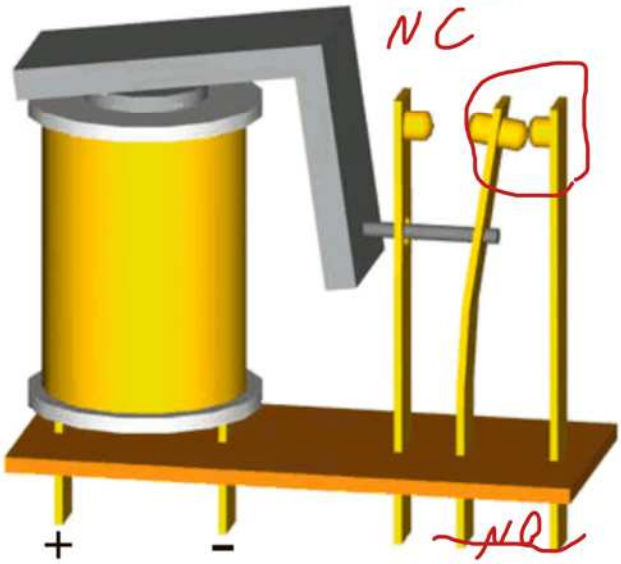

YYH YUYIHON
JQH T78 S-Z
12VDC
NO:20A
NC:12A 14VDC
7A 120VAC







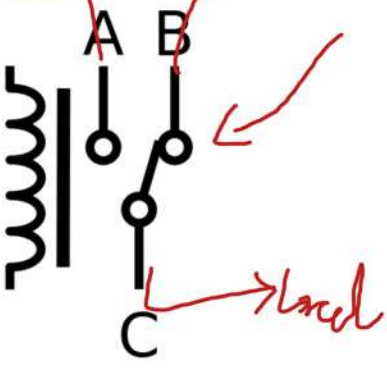
NC



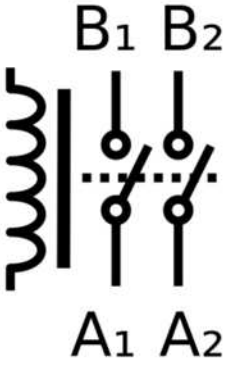
NO

SPST

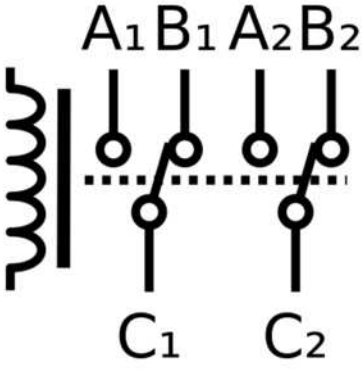
12a 12B



SPDT



DPST

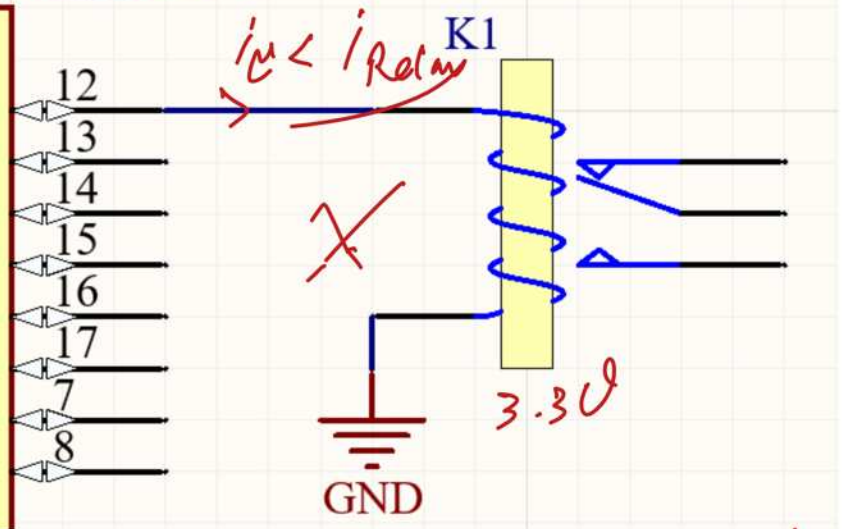


DPDT

DC AC 3.3V 5V 12V

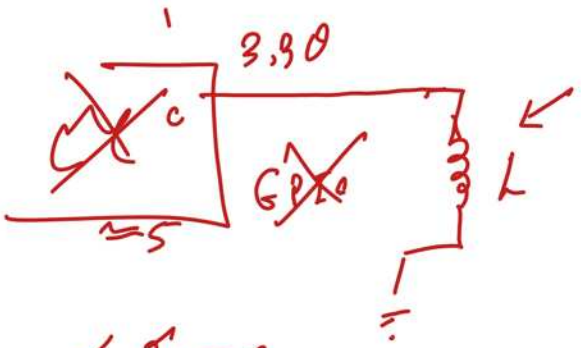
3.3V

PB0(PCINT0/CLKO/ICP1)
PB1(PCINT1/OC1A)
PB2(PCINT2/SS/OC1B)
PB3(PCINT3/OC2A/MOSI)
PB4(PCINT4/MISO)
PB5(SCK/PCINT5)
PB6(PCINT6/XTAL1/TOSC1)
PB7(PCINT7/XTAL2/TOSC2)



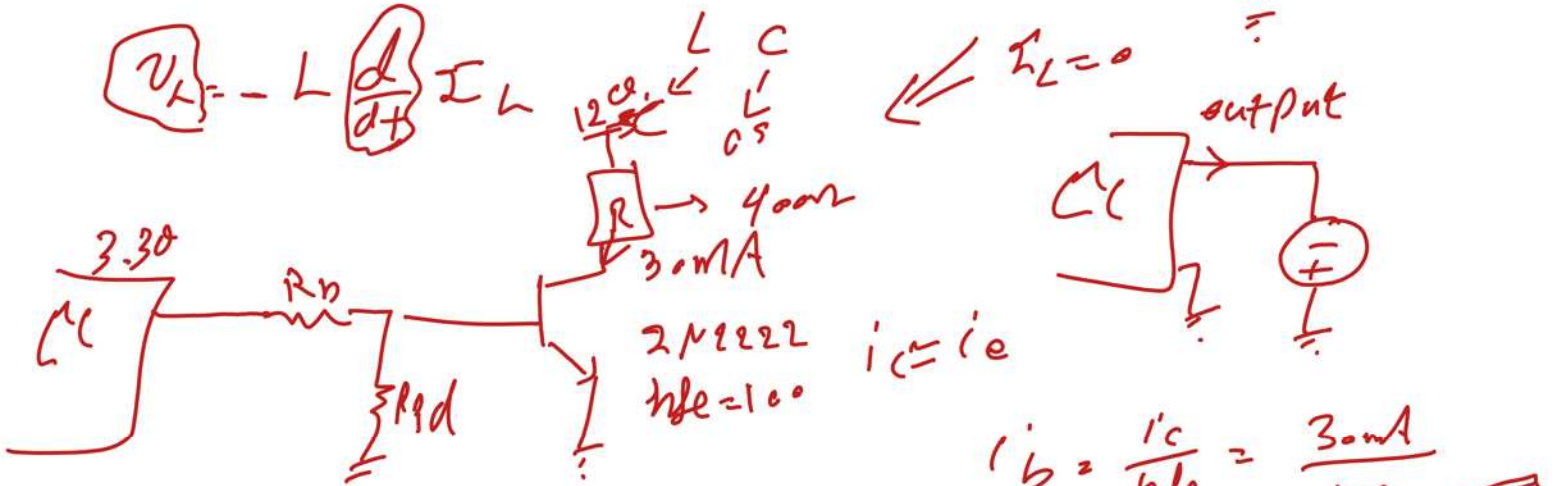
V	R	I
3.3	25Ω	120mA
5	70Ω	70mA
12	400Ω	30mA

40mA × 120mA !!



$V_L = -L\frac{d}{dt}I_L$

$I_L = 0$

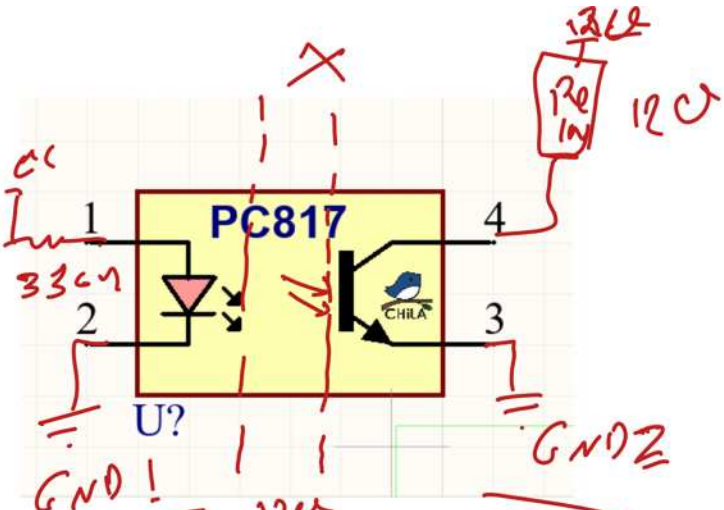


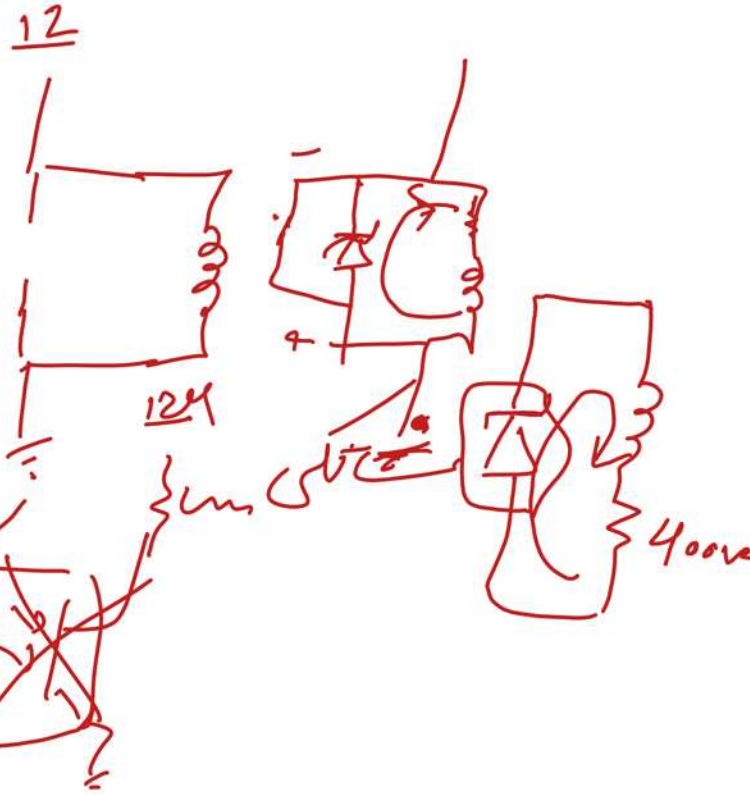
$-3.3 + R_b \cdot i_b + 0.7 = 0$

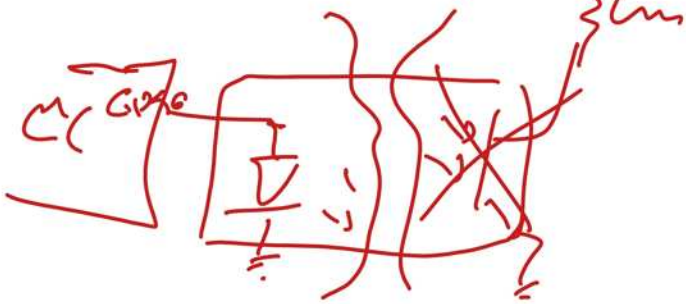
$i_b = \frac{i_c}{h_{fe}} = \frac{30mA}{100} = 300\mu A$

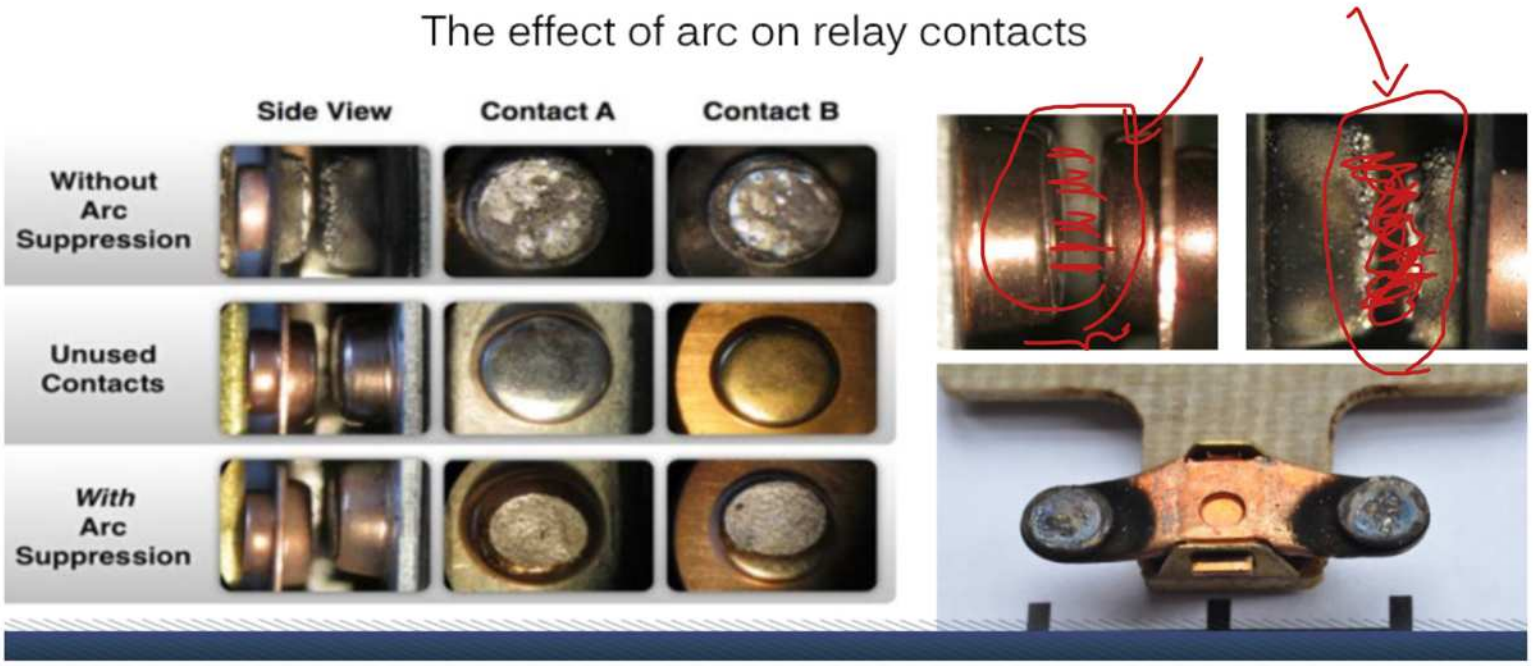
$\Rightarrow -3.3 + R_b(300\times10^{-6}) + 0.7 = 0$ solve $\Rightarrow R_b = 8.2k\Omega$

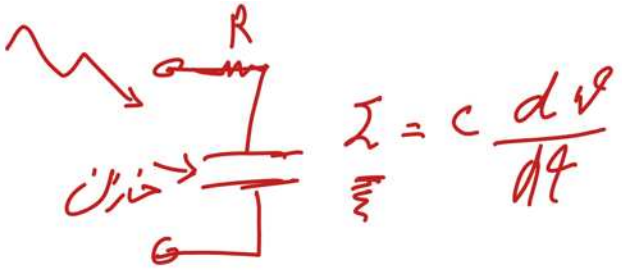
$R_{PD} = 10R_b \Rightarrow R_{PD} = 82k\Omega$

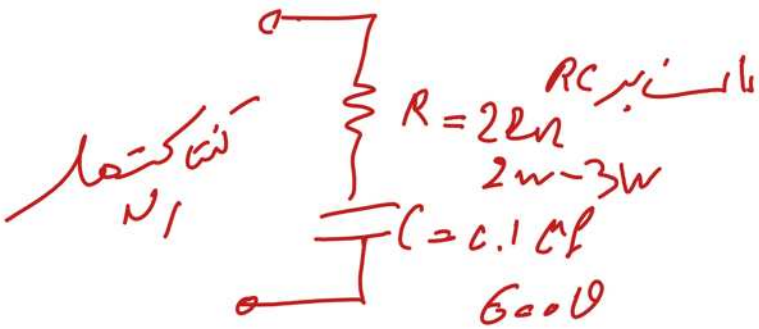

PC817
1
2
3
4
U?
GND!
GND2
12V
12V
12V
12V
3.3V
33Ω

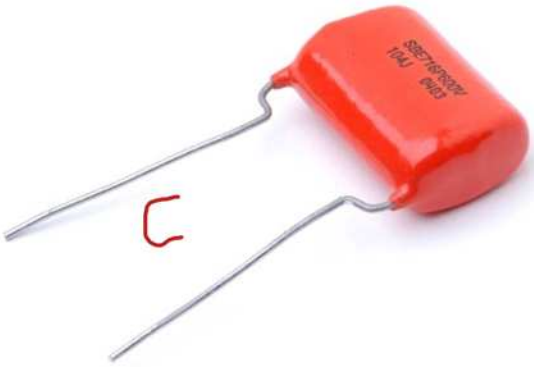

12
12V
400V



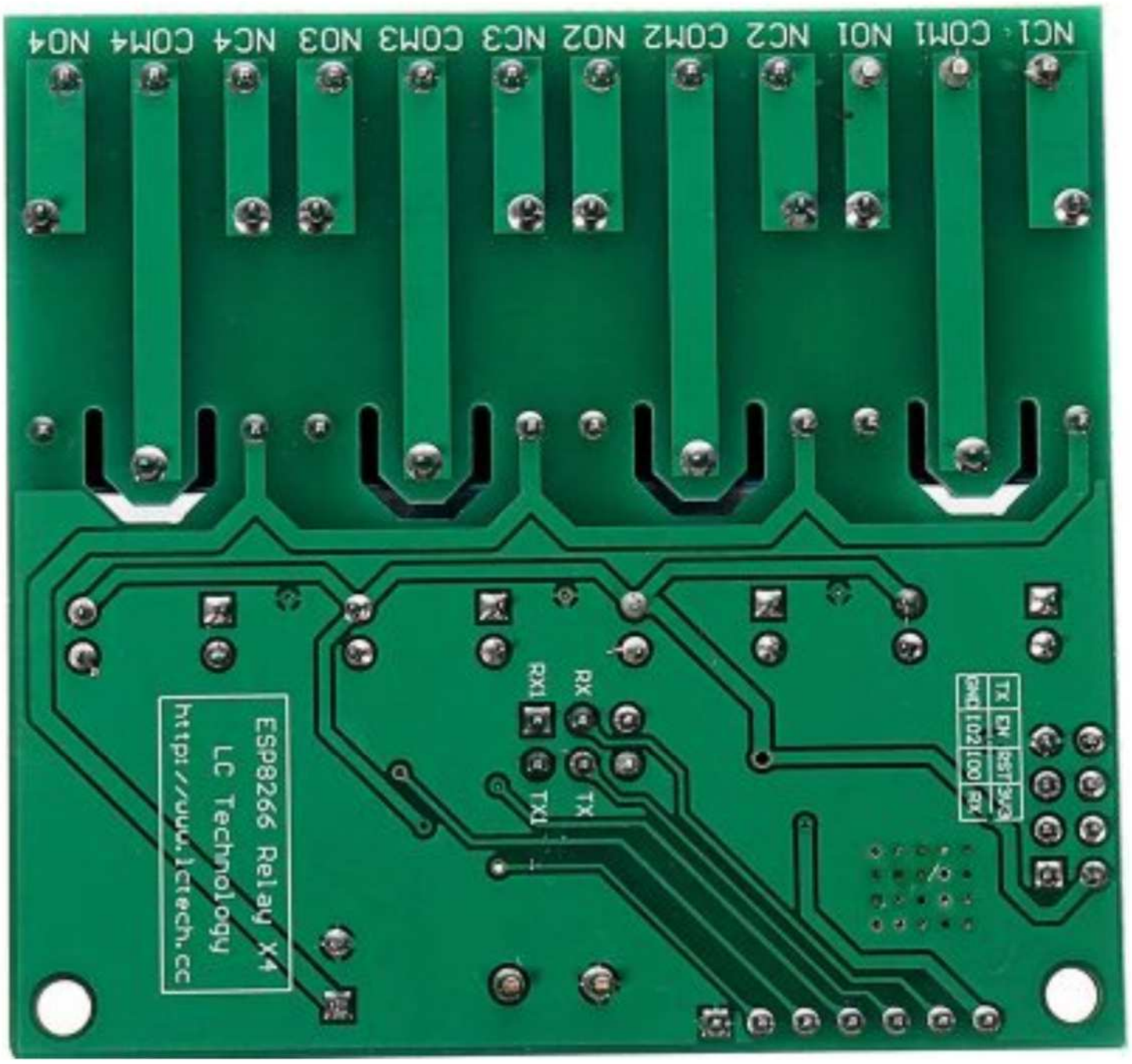

The effect of arc on relay contacts
Side View
Contact A
Contact B
Without Arc Suppression
Unused Contacts
With Arc Suppression


R
خازن
$I = C \frac{dV}{dt}$


R = 22Ω
2W-3W
C = 0.1 μF
600V


C


R


NC1 COM1 NO1 NC2 COM2 NO2 NC3 COM3 NO3 NC4 COM4 NO4
RX1
RX
TX1
TX
ESP8266 Relay X4
LC Technology
http://www.lctech.cc
TX EN RST 3V3
GND IO2 IO0 RX