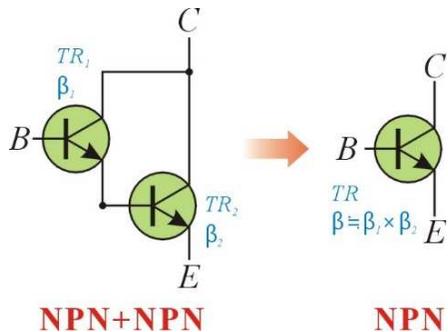
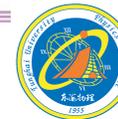


實驗 13： 達靈頓電路

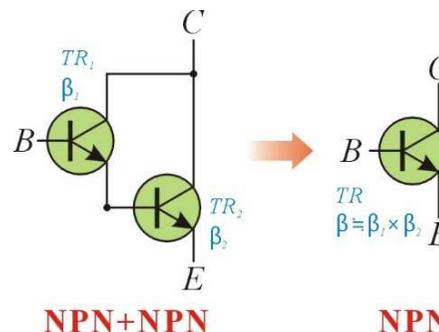


1



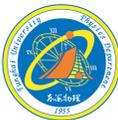
在電子電路應用上，如果需要高輸入阻抗或是需要大電流增益時，可以將兩個電晶體的集極串接在一起，也就是將一個射極隨耦器（Emitter Follower, EF）串接另一射極隨耦器，形成一組複合電路，稱此複合電路為達靈頓電路（Darlingtonpair）。

$$\beta = \beta_1 \times \beta_2$$

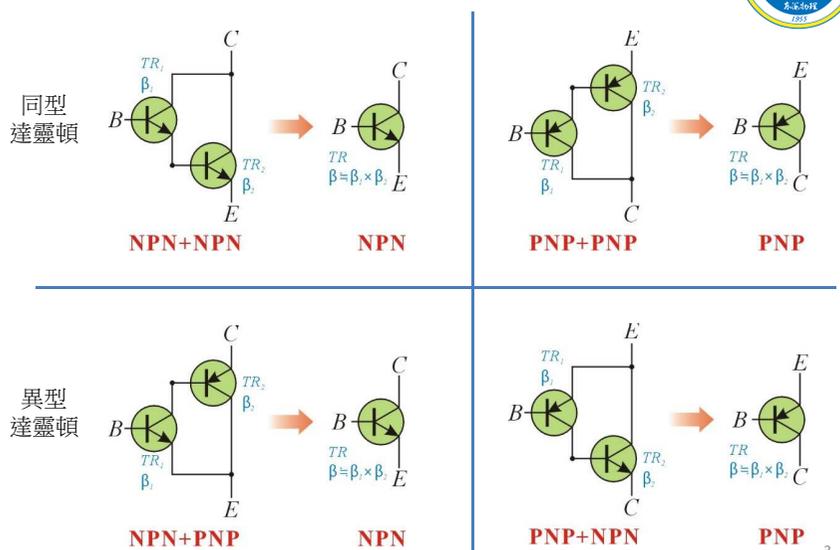


射極隨耦器
---共集極 (CC) 放大電路

2



達靈頓電路的四種組態：

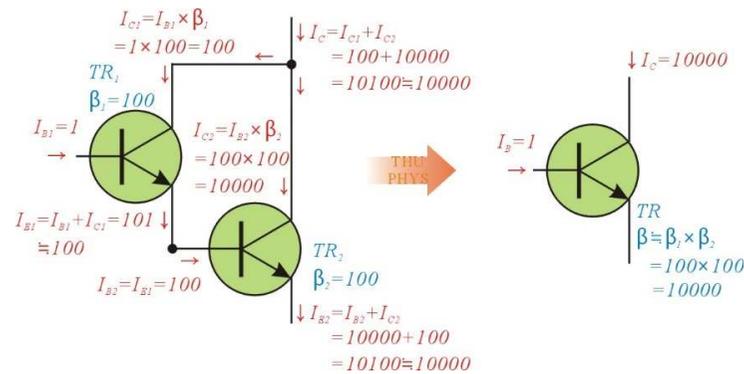


3

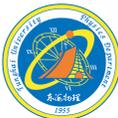


達靈頓電路的特性：

- 1、電流增益高
- 2、電壓增益約等於1（略小於1）
- 3、輸入阻抗高
- 4、輸出阻抗低
- 5、隨耦器之特色，故適合擔任阻抗匹配
- 6、漏電流影響極大，易造成電路不穩定



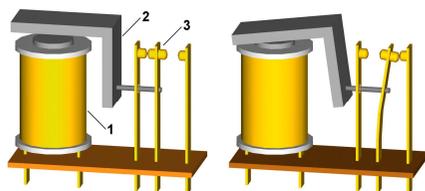
4



繼電器

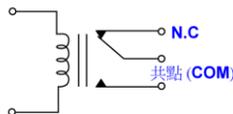
利用電磁力來控制切換方向的開關。

- 1、Coil線圈
- 2、Armature電樞、銜鐵
- 3、Moving contact可移動接點

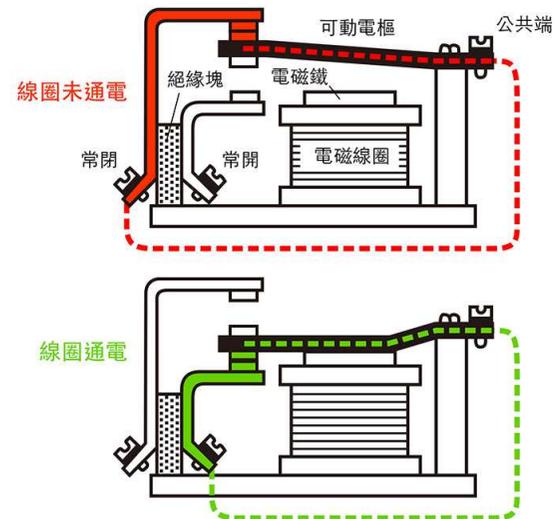
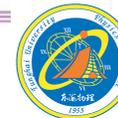


常見的符號：

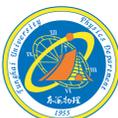
- NO (Normally Open) 表示常開接點。
平常處於開路 (open)，線圈通電後才與共接點 COM 接通 (close)。俗稱a接點。
- NC (Normally Close) 表示常閉接點。
平常處於閉路 (close) (與共接點COM連接)，線圈通電後成為開路 (open)。俗稱b接點。
- COM (Common) 表示共接點。



http://taiwanarduino.blogspot.tw/2014/08/blog-post_17.html

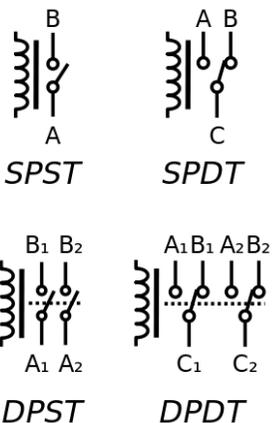
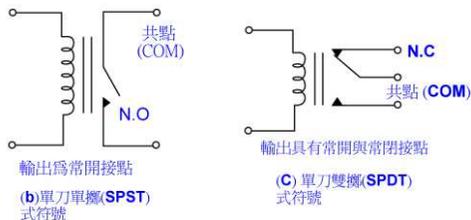


<https://webduino.io/tutorials/tutorial-14-relay.html>



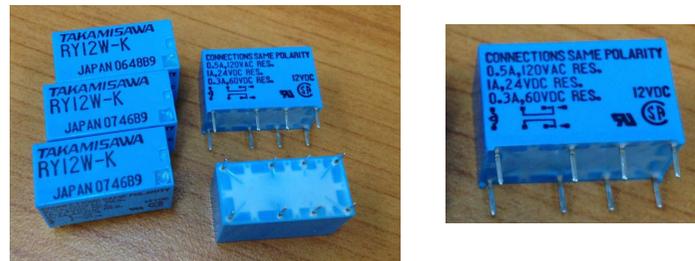
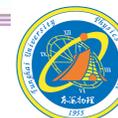
Relay 的開關種類有分幾種：
參考英文版的 Wiki：relay

- SPST：Single Pole Single Throw，單刀單擲
- SPDT：Single Pole Double Throw，單刀雙擲
- DPST：Double Pole Single Throw，雙刀單擲
- DPDT：Double Pole Double Throw，雙刀雙擲



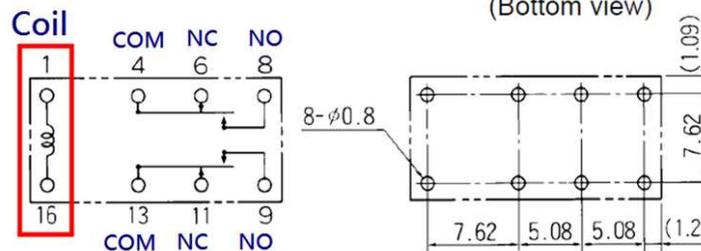
輸出為常閉接點
(b)單刀單擲(SPST)式符號

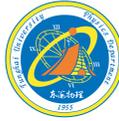
輸出具有常開與常閉接點
(C)單刀雙擲(SPDT)式符號



● Schematics (Bottom view)

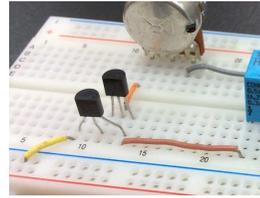
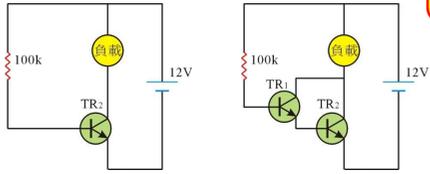
● PC board mounting hole layout (Bottom view)



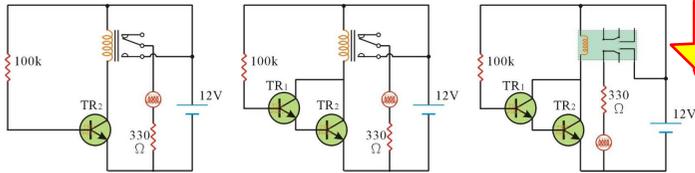


繼電器的使用

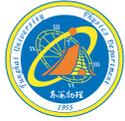
- 1-燈泡亮度有差異？
- 2-繼電器有作用？



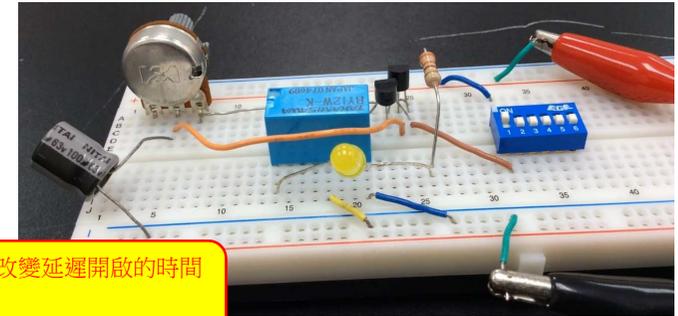
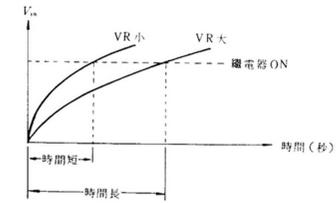
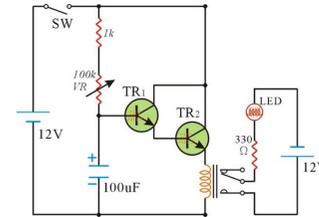
負載可使用小燈泡或是12V繼電器



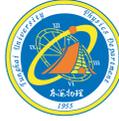
圖中的繼電器為雙刀雙擲



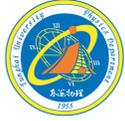
達靈頓電路的應用--延遲開啟



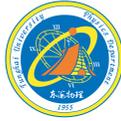
轉動可變電阻，改變延遲開啟的時間
最少延遲.....秒
最多延遲.....秒



達靈頓電路的應用--延遲關閉



達靈頓電路的應用--閃爍繼電器



我們沒有最好
只有追求更好

有空繼續補~~



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