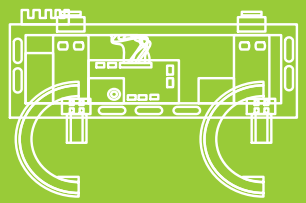
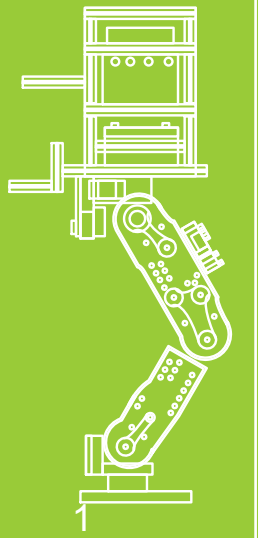
實驗三 MOS控制LED明亮、BJT阻值調配

112-2 機電系統原理與實驗一



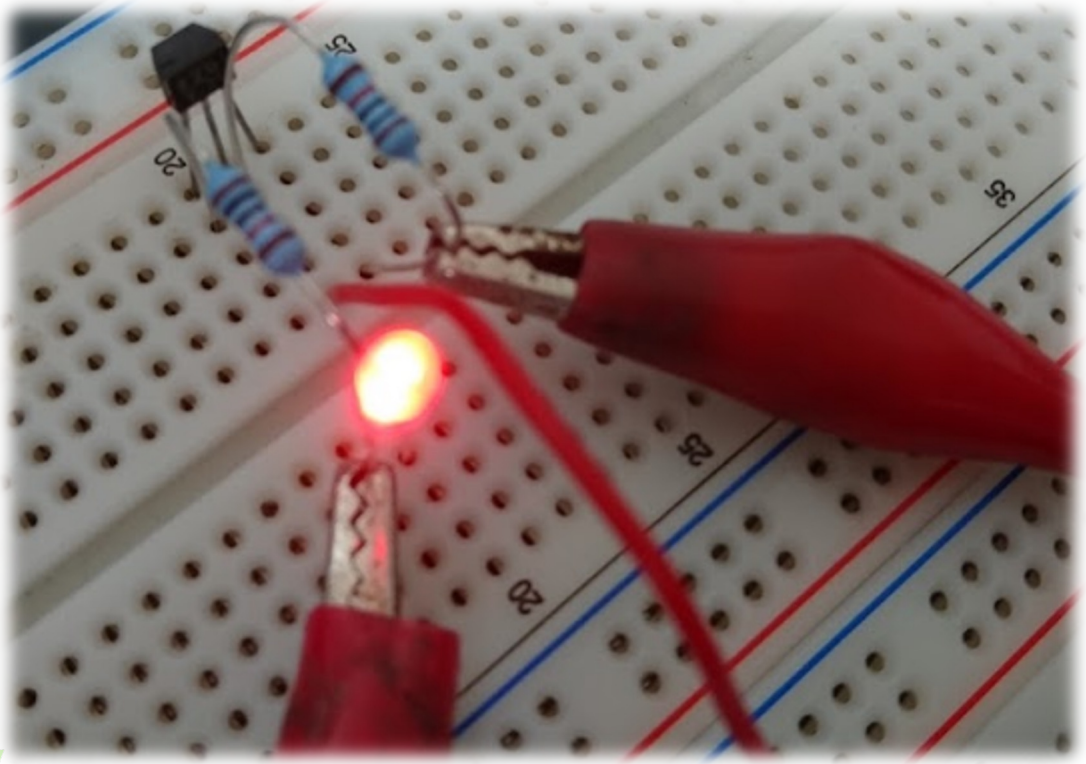


Bio-inspired Robotic Laboratory

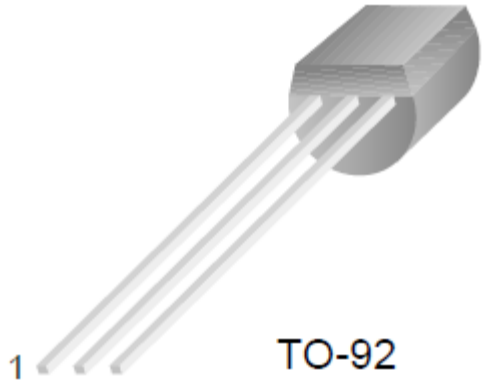
實驗目的

- 了解MOS, BJT接法與選配
- 電阻值改變對LED亮度的影響

成品

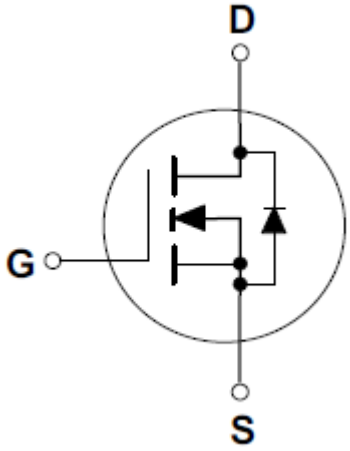


NMOS 2N7000

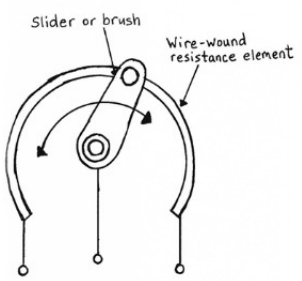


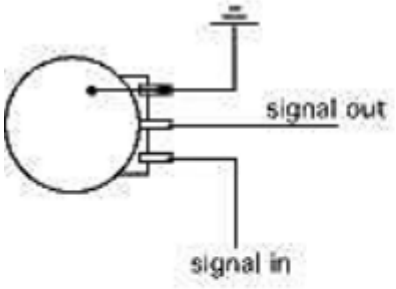
TO-92

1. Source 2. Gate 3. Drain

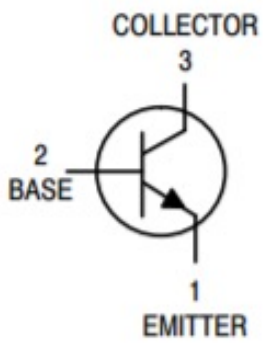


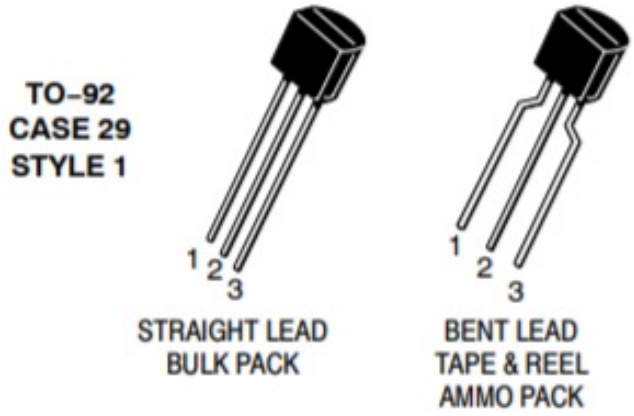
可變電阻


Slider or brush
Wire-wound resistance element


signal out
signal in

BJT 2N3904

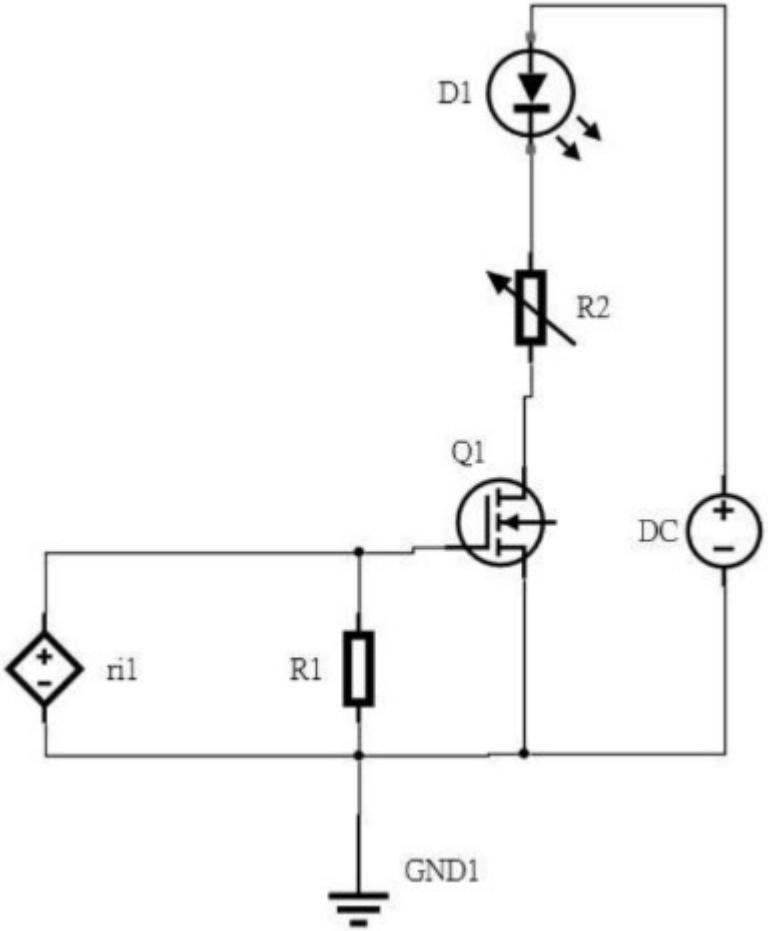

COLLECTOR
3
2
BASE
1
EMITTER


TO–92
CASE 29
STYLE 1
1
2
3
STRAIGHT LEAD
BULK PACK
1
2
3
BENT LEAD
TAPE & REEL
AMMO PACK

BJT 2N3904

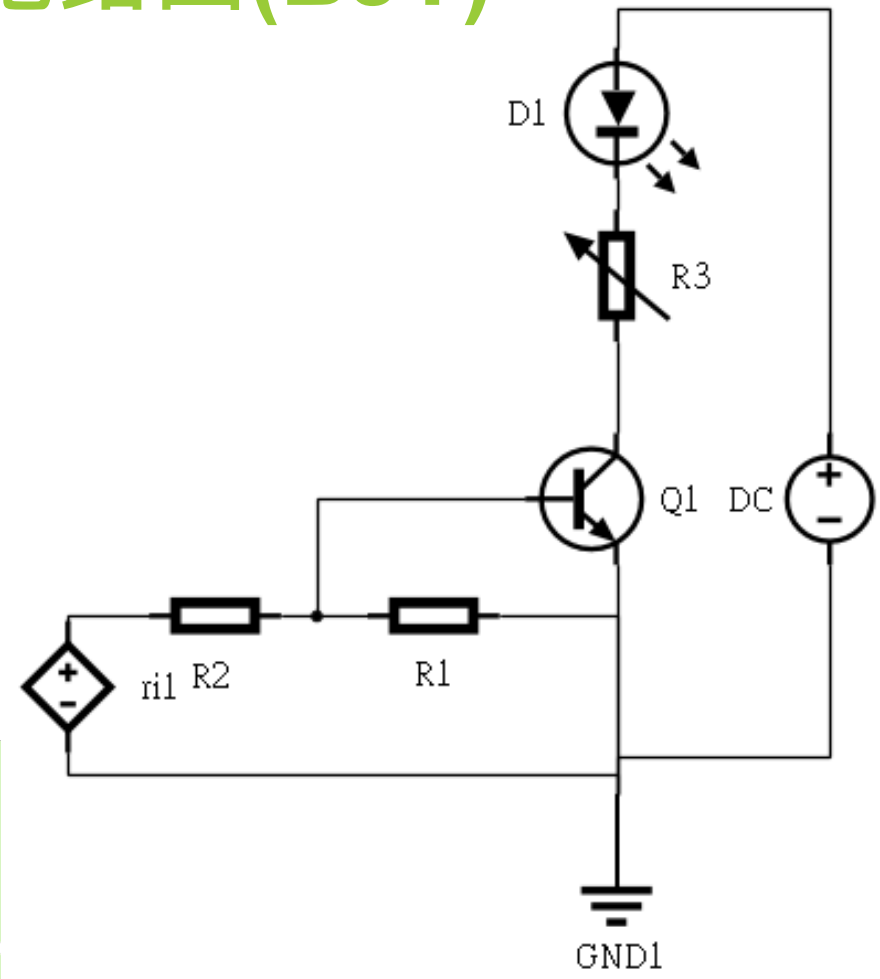
Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector – Emitter Saturation Voltage (Note 2) (I_C = 10 mAdc, I_B = 1.0 mAdc) (I_C = 50 mAdc, I_B = 5.0 mAdc	$V_{CE(sat)}$	 – –	 0.2 0.3	Vdc
Base – Emitter Saturation Voltage (Note 2) (I_C = 10 mAdc, I_B = 1.0 mAdc) (I_C = 50 mAdc, I_B = 5.0 mAdc)	$V_{BE(sat)}$	 0.65 –	 0.85 0.95	Vdc

電路圖 (MOS)



$R1 = 10K\Omega$
(pull-down resistor)

電路圖(BJT)



$R1 = 1K\Omega$

(pull-down resistor)

配分

- 基本題:
  - NMOS 控 LED 40%
  - BJT 控 LED
    - 亮燈20%
    - 計算R2範圍40%
- 驗收時間17:30前
- 總分100%