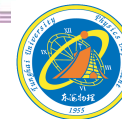
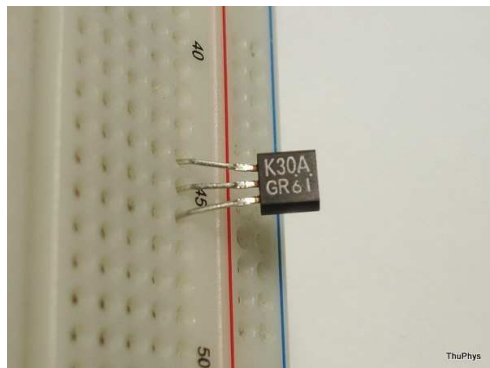
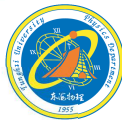
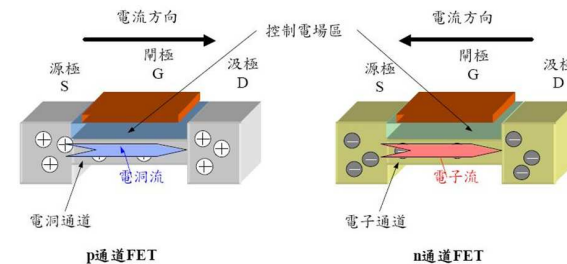


實驗07： 場效電晶體 (FET)



場效電晶體 (Field-Effect Transistor ; FET)

- 接面場效電晶體 (Junction FET ; JFET)
- 金屬-氧化層-半導體-場效電晶體
簡稱金氧半場效電晶體 (Metal-Oxide-Semiconductor Field-Effect Transistor, MOSFET)
 - 增強型 (Enhancement)
 - 空乏型 (Depletion)
- P-type FET
N-type FET



電晶體 (Transistor)

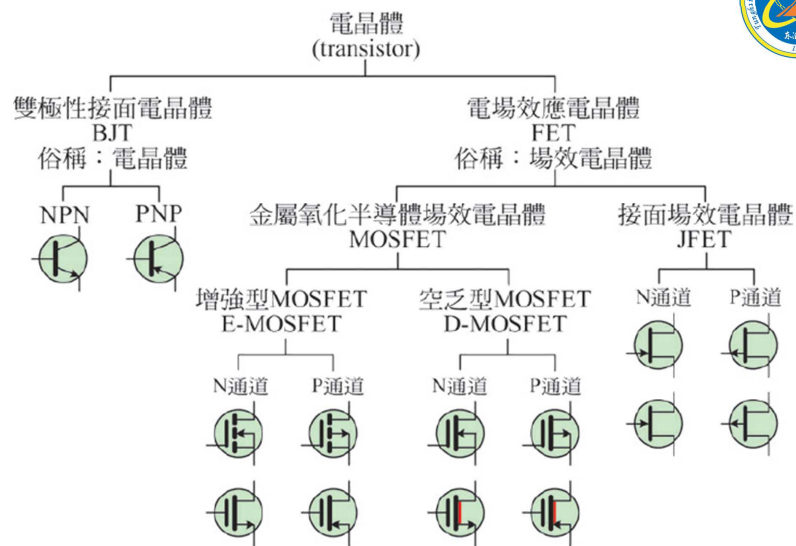
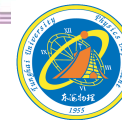
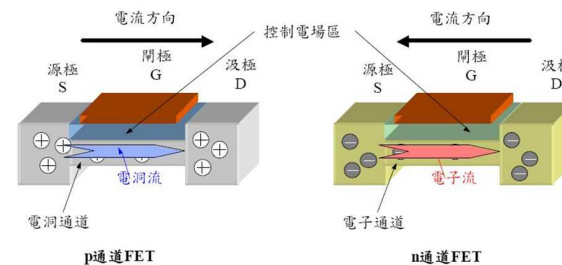
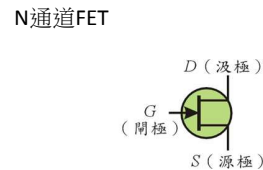
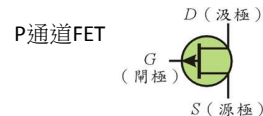


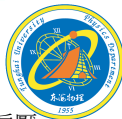
圖 8-1 常見電晶體的分類



場效應電晶體 (Field-Effect Transistor ; FET)

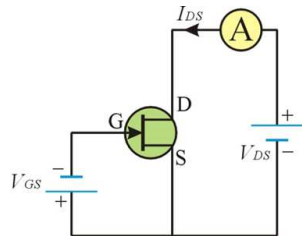


電晶體接腳：
源極 (Source ; S)
閘極 (Gate ; G)
汲極 (Drain ; D)

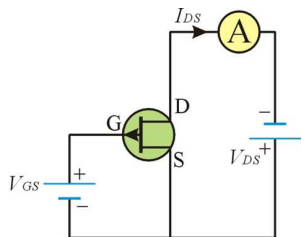


場效應電晶體 (Field-Effect Transistor ; FET) 加偏壓的方式：

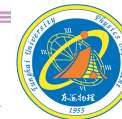
N通道FET：在正常使用時，汲極D要接正，源極S接負，閘極G則加上逆向偏壓。



P通道FET：閘極G則加上逆向偏壓。

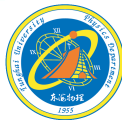


圖要怎麼畫？



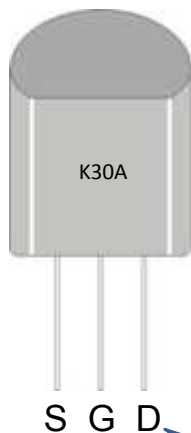
場效應電晶體 (Field-Effect Transistor ; FET)

場效電晶體汲電流分類：				
	R	O	Y	GR
汲極電流 I_{DSS} (mA)	0.3 ~ 0.75	0.6 ~ 1.4	1.2 ~ 3.0	2.6 ~ 6.5

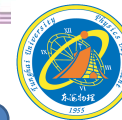


場效應電晶體 (Field-Effect Transistor ; FET)

場效電晶體接腳：
源極 (Source ; S)
閘極 (Gate ; G)
汲極 (Drain ; D)

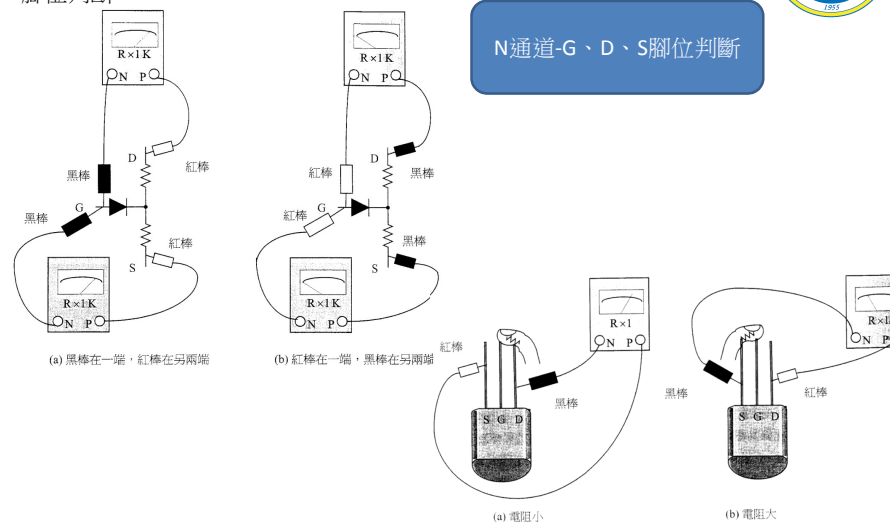


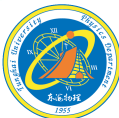
其他型號電晶體的腳位要查詢data sheet



場效應電晶體 (Field-Effect Transistor ; FET)
腳位判斷

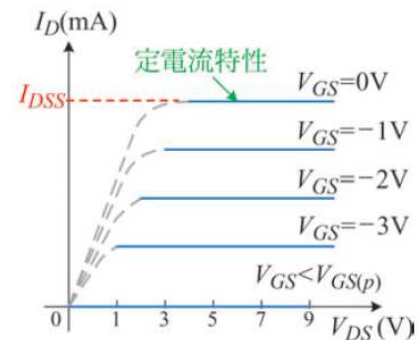
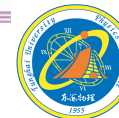
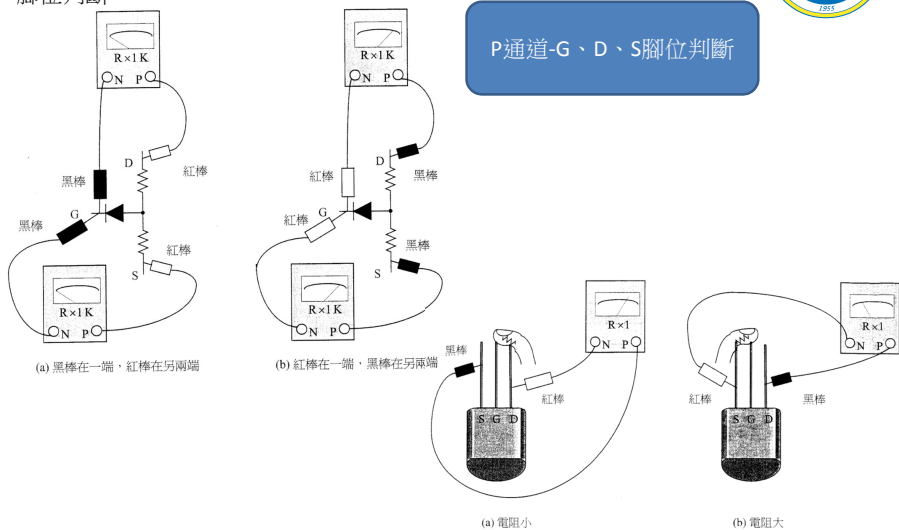
N通道-G、D、S腳位判斷



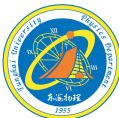


場效應電晶體 (Field-Effect Transistor ; FET)
腳位判斷

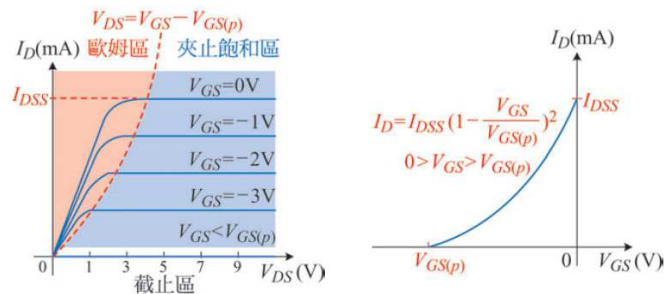
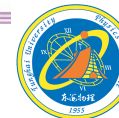
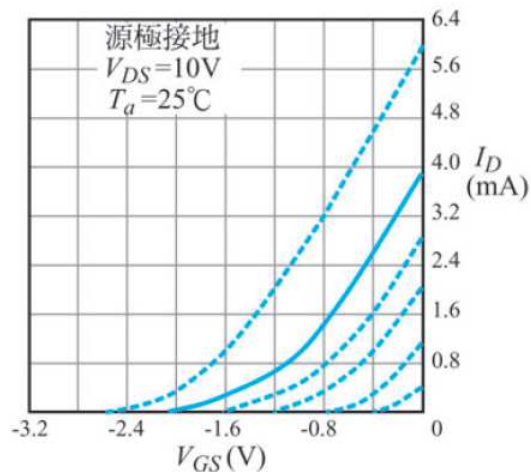
P通道-G、D、S腳位判斷



(b) $V_{DS}-I_D$ 輸出特性曲線

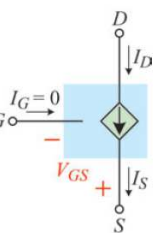


轉移特性曲線



(a) $V_{DS}-I_D$ 輸出特性曲線

(b) $V_{GS}-I_D$ 輸入輸出特性曲線

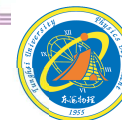
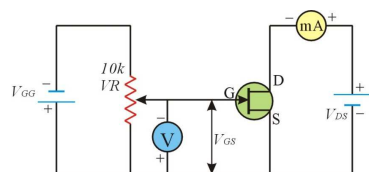


(c) 直流等效電路

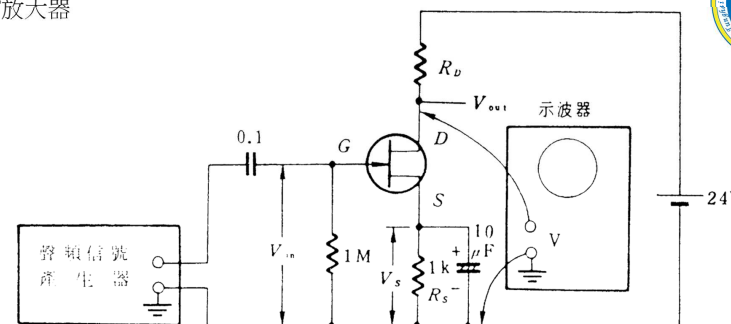
圖 8-40 N 通道 JFET 之特性曲線



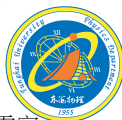
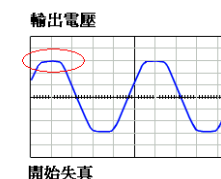
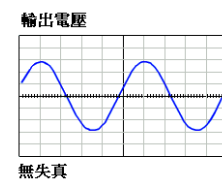
測量FET的靜特性



FET放大器

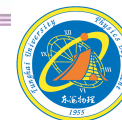
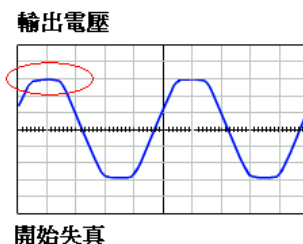
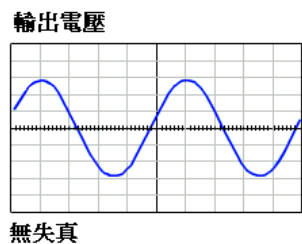


何謂不失真：

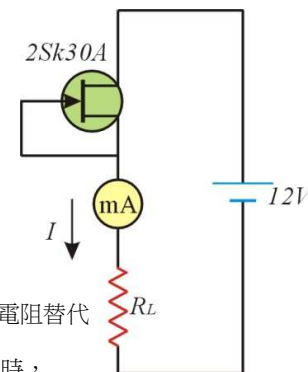


何謂不失真：

當輸入訊號為正弦波，可以在輸出訊號端看到放大的訊號，但是經過電容充電，會使輸出的訊號最後形成方波，若是降低輸入訊號振幅，可以是輸出訊號波形再恢復到正弦波，訊號不失真即是指輸出訊號**仍然維持正弦波**的形狀，如圖。

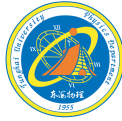


恒流源



R_L ：可用可變電阻替代

旋轉可變電阻時，
電流大小會改變？



我們沒有最好
只有追求更好

有空繼續補~~



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網址：<http://physics.thu.edu.tw/>