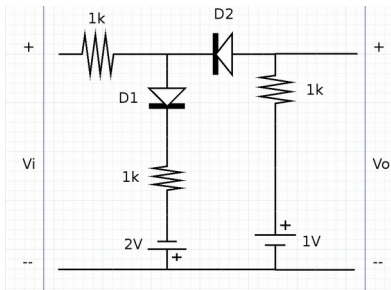


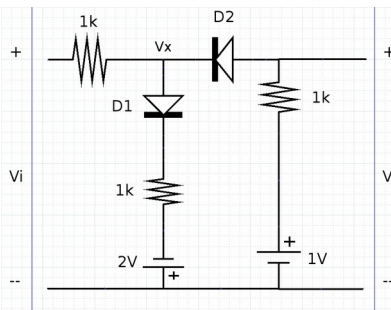
電子學實習 期中考

晶片二甲 4A337092 黃碩裕

截波電路

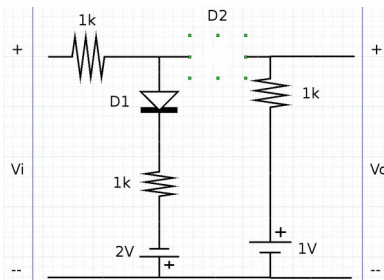


V_i OPEN 時, D1、D2 皆導通

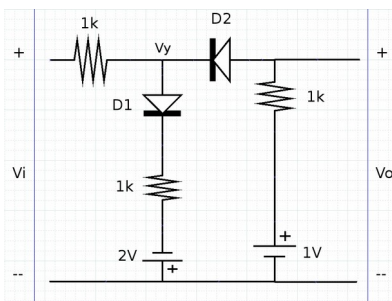


在 $V_x > 0.3V$ 時, D1 導通, D2 不導通, 則 V_i

$$V_i = \frac{0.3 - 0.7 - (-2)}{1k} * 1k + 0.3 = 1.9V$$



1. 當 $1.9V \leq V_i$, D1 導通, D2 不導通, 則 $V_o = 1V$



2. 當 $? \leq V_i < 1.9V$, D1 導通, D2 導通

$$\frac{V_y - V_i}{1k} + \frac{V_y - 0.7 - (-2)}{1k} + \frac{V_y + 0.7 - 1}{1k} = 0$$

$$V_y = \frac{1}{3} V_i - \frac{1}{3} \dots (A) \quad V_o = V_y + 0.7$$

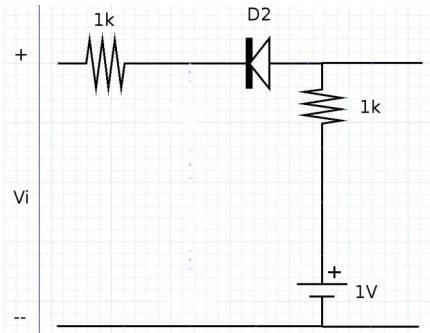
$$V_o = \left(\frac{1}{3} V_i - \frac{1}{3}\right) + 0.367 \dots (B)$$

在 $V_y < 1.3$ 時, D1 不導通, D2 導通

$V_y = 1.3$ 代入(A)求得 $V_i = -2.901V$, 即? = -2.901

電子學實習 期中考

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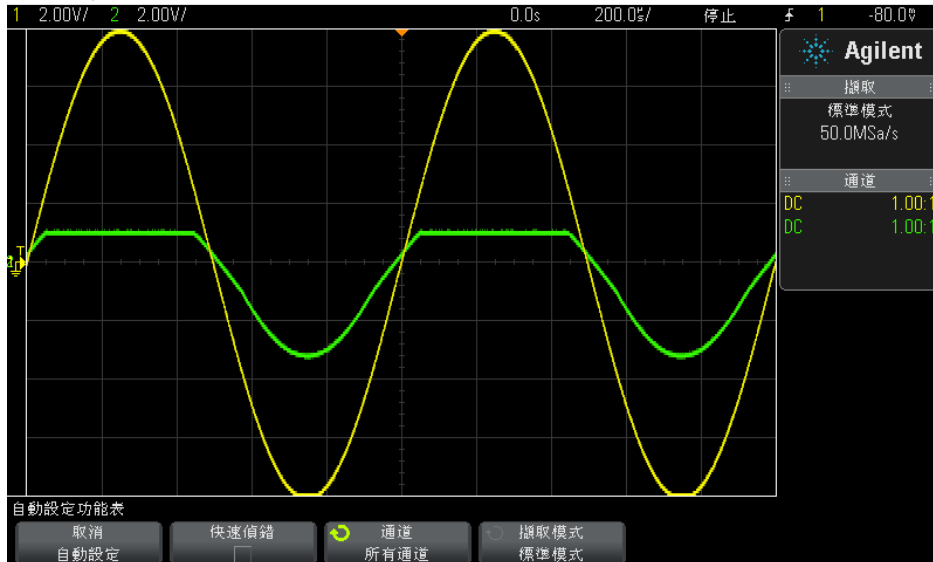
3. 當 $V_i < -2.9V$ 時, D1 不導通, D2 導通

$$V_o = \frac{V_i - (-0.7) - 1}{1k + 1k} * 1k + 1 = \frac{1}{2} V_i + 0.85 \dots\dots (C)$$

- V_o
- $V_i = -2.9V$, 代入(B), $V_o = -0.6V$
 - $V_i = 1.9V$, 代入(B), $V_o = 1V$
 - $V_i = -2.9V$, 代入(C), $V_o = -0.6V$
 - $V_i = -8V$, 代入(C), $V_o = -3.15V$

波型如下

DSO-X 2012A, MY54313174, Thu Oct 29 09:38:00 2015



DSO-X 2012A, MY54313174, Thu Oct 29 09:35:19 2015

