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1-6. 1. 硅管 $U_{on} \approx 0.7V$

∴ 正向导通

$$I = \frac{10 - 0.7}{5.1} mA = 1.82 mA$$

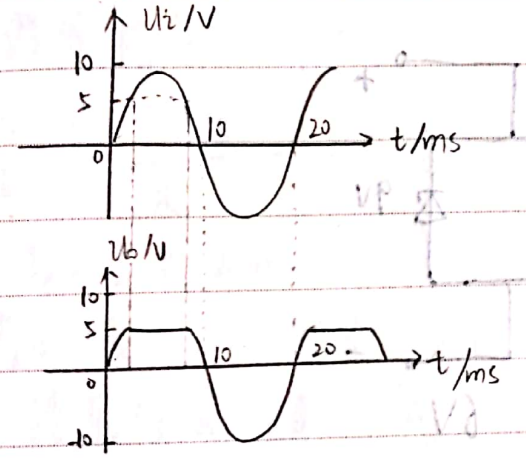
2. 温度升高，U_{on} 减小

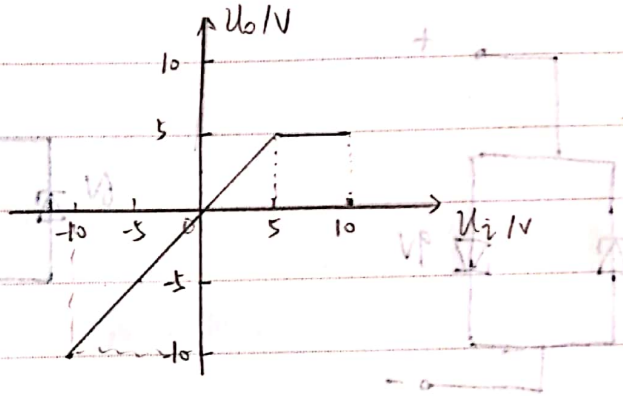
$U_D = U_{ON}$ ∴ U_{ON} 减小

I 增大

1-8. a) $U_i < 5V$ 时，VD 导通 $u_o = u_i$

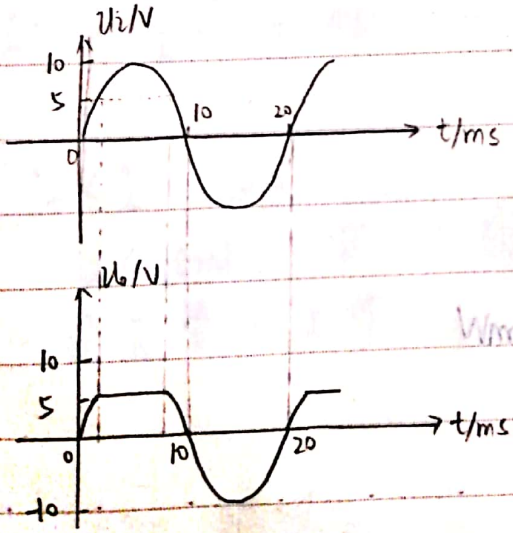
$U_i > 5V$ 时，VD 截止，$u_o = 5V$

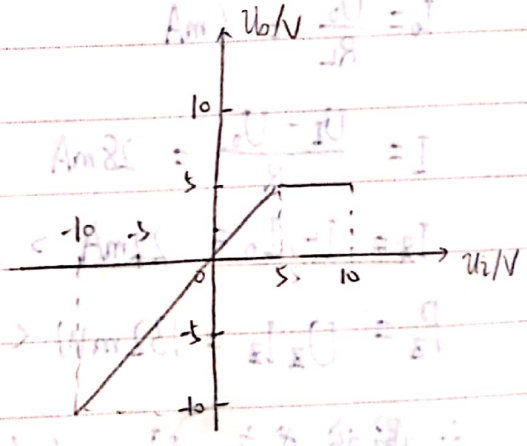




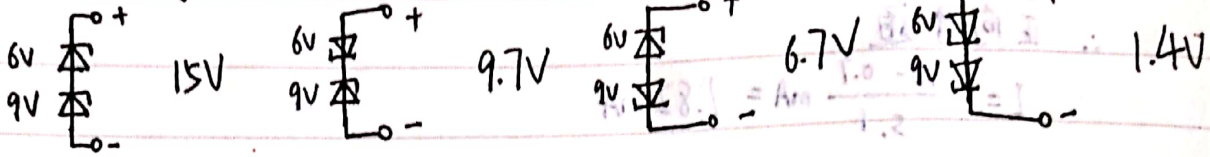
b) $U_i > 5V$ VD 导通 $u_o = 5V$

$U_i < 5V$ VD 截止 $u_o = u_i$

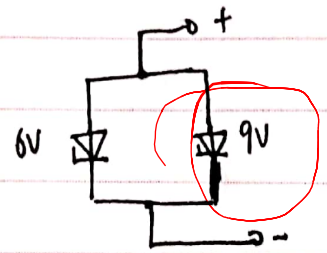


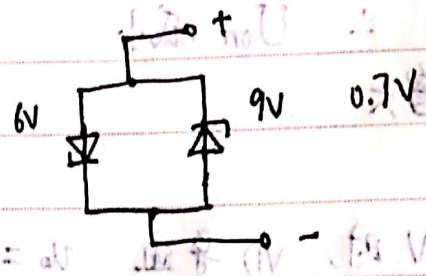


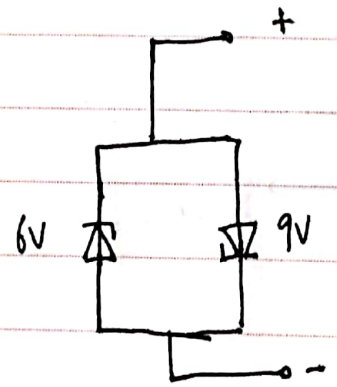
1-9. 串联时有4种稳压值，15V、9.7V、6.7V、1.4V

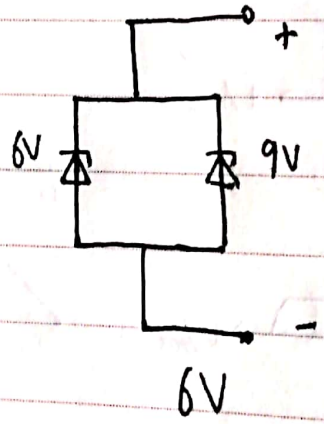


并联时有2种稳压值：6V、0.7V









1-10. 1. 假设稳压管工作，则 $U_o = 6V$

$$I_o = \frac{U_o}{R_L} = 6mA$$

$$I = \frac{U_I - U_o}{R} = 28mA$$

$$I_Z = I - I_o = 22mA > 10mA$$

$$P_Z = U_Z I_Z = 132mW < 200mW$$

∴ 假设成立，$U_o = 6V$

2. 假设稳压管工作. $\therefore U_O = U_Z = 6V$

$$I_O = \frac{U_O}{R_L} = 60mA$$

$$I = \frac{U_I - U_O}{R} = 28mA$$

$\therefore I_Z = I - I_O < 0$

$\therefore$ 假设不成立,

$\therefore$ 稳压管截止

$$\therefore U_O = \frac{R_L}{R_L + R} U_I = 3.33V$$

3. 假设稳压管工作,

$$\therefore I = \frac{U_I - U_Z}{R} = 28mA$$

$I_Z = I = 28mA > 10mA$

$P_Z = U_Z I_Z = 168mW < 200mV$ 假设成立

稳压管正常工作.

4. 假设稳压管工作

则

$$I = \frac{U_I - U_Z}{R} = 2mA$$

$\therefore I_Z < I = 2mA$

$I_Z < 10mA$, 假设不成立,

$\therefore$ 稳压管不工作.