

作业纸

课程名称: 模电-第十章

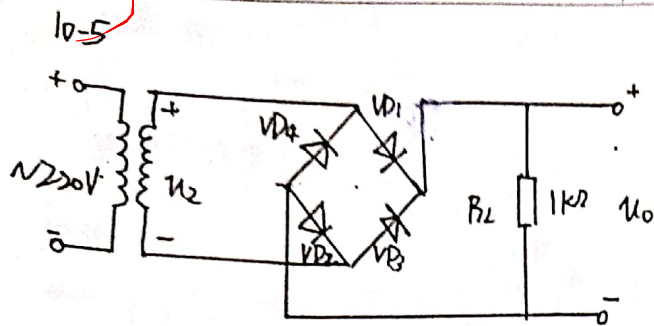
班级:

教学班级: 06011107

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学号: 1320171029

第 页



$$1. U_o(AV) = 0.9U_2 = 18V$$

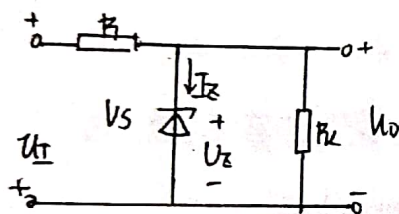
$$I_o(AV) = \frac{U_o(AV)}{R_L} = 18mA$$

$$U_{AM} = \sqrt{2}U_2 = 28.2V$$

$$I_D(AV) = \frac{1}{2}I_o(AV) = 9mA$$

2. 若VD极性接反, 变压器次级将短路, 烧坏变压器线圈.

10-10.



1. 不能. 因为很容易烧坏稳压管. 且稳压效果很差. R在稳压电路中主要作用就是在电网电压波动和负载变化时, 使稳压管始终工作在稳压区内.

2. 当输入电压上升10%, 负载电流为零时, 流过稳压管的电流最大. 其值应小于稳压管最大稳定电流.

$$\text{即 } \frac{U_{1max} - U_o}{R} < I_{Zmax}$$

$$\because U_2 = 15V \therefore U_{1max} = 1.2 \times (1.1U_2) = 19.8V$$

$$R > \frac{U_{1max} - U_o}{I_{Zmax}} = 363\Omega$$

当电网电压下降10%, 而负载电流最大时, 流过稳压管电流为最小值. 应大于稳压管稳定电流 I_Z

$$\frac{U_{1min} - U_o}{R} - I_{omax} > I_Z$$

$$U_{1min} = 1.2 \times (0.9U_2) = 16.2V$$

联系方式: _____



作业纸

课程名称: _____

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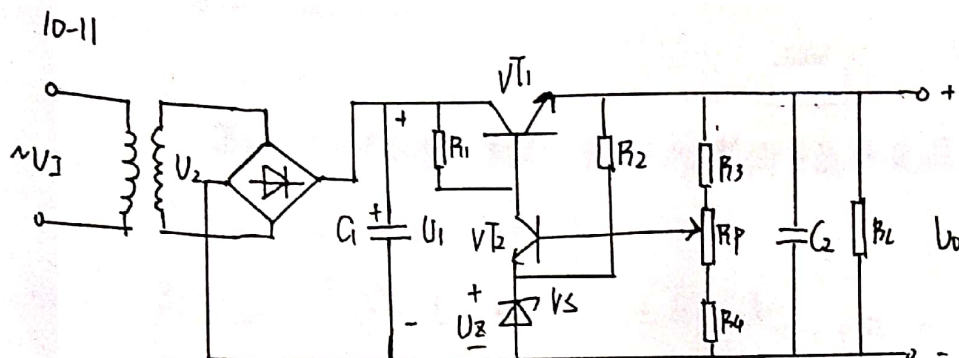
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第 _____ 页

应有 $R < \frac{U_{\min} - U_0}{U_{\max} + I_Z} = 680 \Omega$.

即: $363 \Omega < R < 680 \Omega$.

选 $R = 510 \Omega$.



1. $\because U_1 = 24V \quad U_2 = \frac{U_1}{1.2} = 20V$.

2. 当电位器调到最下端: $U_{BE} + U_Z = \frac{U_0 R_4}{R_3 + R_{RP} + R_4}$

$\therefore U_{01} = \frac{R_3 + R_{RP} + R_4}{R_4} (U_{BE} + U_Z) = 18V$

当电位器调到最上端:

$\frac{U_0 (R_4 + R_{RP})}{R_3 + R_{RP} + R_4} = U_{BE} + U_Z$

$U_{01}' = \frac{R_3 + R_{RP} + R_4}{R_4 + R_{RP}} (U_{BE} + U_Z) = 9V$

$\therefore U_0$ 的可调范围为 $9 \sim 18V$

3. 若 $R_3 = 600 \Omega$

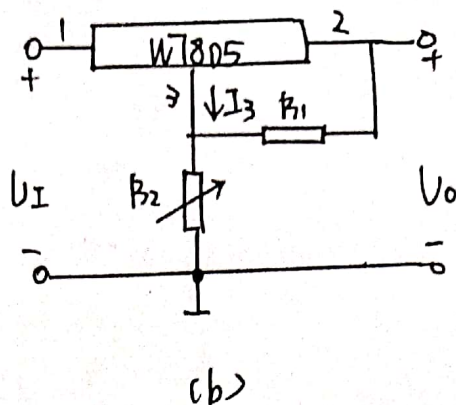
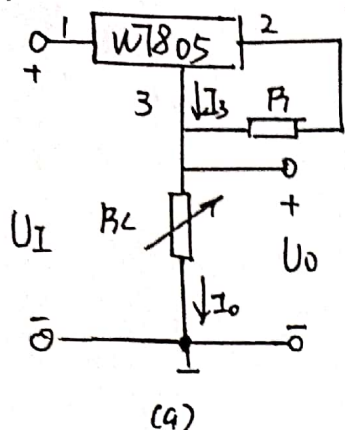
$U_{02} = \frac{R_3 + R_{RP} + R_4}{R_4} (U_{BE} + U_Z) = 24V \quad U_Z = 24V. \quad U_{02} = 24V \quad \therefore U_{CES1} = 0V$.

晶体管饱和 $\therefore U_0$ 最高为 $22V = (24 - 2)V$.

联系方式: _____



10-17

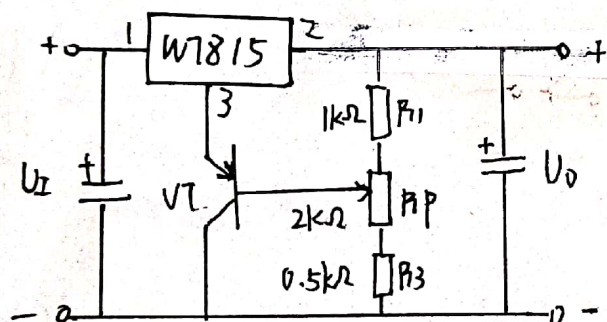


1. 图a电路输出电流恒定. 图b电路输出电压恒定且可调

$$2. I_O = \frac{U_{XX}}{R_1} + I_3 = \frac{5V}{R_1} + I_3$$

$$3. U_O = \frac{R_1 + R_2}{R_1} U_{XX} + I_3 R_2 = \frac{R_1 + R_2}{R_1} \times 5V + I_3 R_2$$

10-19



$$(U_O)_{\max} = (U_{XX} + U_{EB}) \times \frac{R_1 + R_{RP} + R_3}{R_1} = 53.2V$$

$$(U_O)_{\min} = (U_{XX} + U_{EB}) \frac{R_1 + R_{RP} + R_3}{R_1 + R_{RP}} = 17.7V$$

$\therefore U_O$ 调节范围为 $17.7 \sim 53.2V$

