



编号:

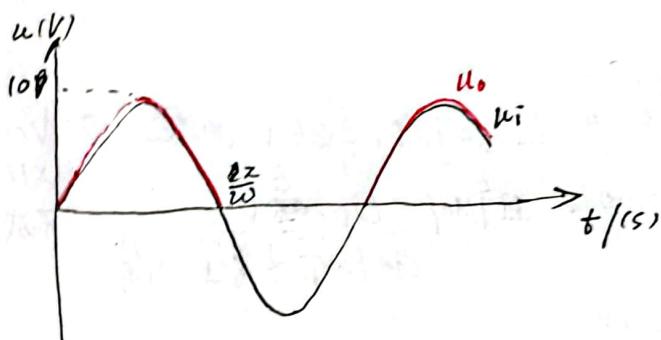
班级:

姓名:

第

页

1.2.



1.6.

$$(1). U_1 = 10V:$$

假设  $D$  未达到稳压电压, 则  $I_D = 0$ .

$$U_o = U_1 \cdot \frac{R_L}{R + R_L} = \frac{10}{3} V < 6V. \text{ 成立}$$

假设  $D$  已达到稳压电压:  $U_o = 6V$ .  $I_D \geq I_{Zmin} = 5mA$ .

$$I_R \geq I_{Zmin} + \frac{U_o}{R_L} = 17.5mA. \quad U_R = 17.5V > U_1. \text{ 矛盾.}$$

$$\text{所以 } U_o = \frac{10}{3} V.$$

$$U_1 = 15V:$$

同理于上:  $U_o = U_1 \cdot \frac{R_L}{R + R_L} = 5V < 6V$ .  $D$  未达到稳压电压, 若已达到,  $U_R = 17.5V > U_1$  矛盾.

$$U_o = 5V.$$

$$U_1 = 35V:$$

$$U_1 \cdot \frac{R_L}{R + R_L} = \frac{35}{3} V > 6V. \text{ 已达到稳压电压.}$$

$$I_R = \frac{U_1 - U_Z}{R} = 29mA. \quad I_{RL} = \frac{U_Z}{R_L} = 12mA.$$

$$\rightarrow I_D = I_R - I_{RL} = 17mA. \quad 5 < 17 < 25. \text{ 成立.}$$

$$U_o = 6V.$$

(2). 则  $I_D = I_R = 29mA$  超过最大稳压电流. 彻底击穿稳压管.  
 $> 25mA$ .



1.11

$u_1 = 0$  :  $I_B = 0$ . 晶体管截止.

若稳压管未击穿, 则  $|I_D| = 0 \mu A < 5V$ . 不成.

稳压管击穿.  $u_o = -5V$ .

$u_1 = -5V$  :  $I_B = \frac{|u_1| - |U_{BE}|}{R_b} = 0.48mA$ .

若在放大状态:  $I_C = \beta I_B = 24mA$ .  $U_{RC} = I_C R_c = 24V$  ~~24V~~  $> V_{CC} - |U_{CE}|$

若在饱和状态:  $u_o = -u_{CES} = -0.1V$ . 且  $|u_o| < U_D = 5V$ .  
稳压管未击穿.

所以  $u_o = -0.1V$ .

