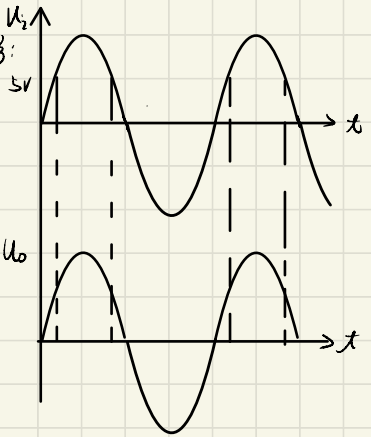
1120193609 魏宇霄

1-8 解：(a) 当 u_i 处于正半周期且 $u_i < 5V$ 时，二极管导通；

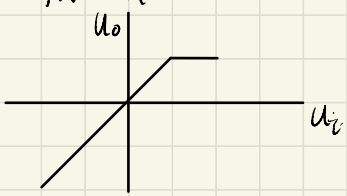
u_i 处于正半周期且 $u_i > 5V$ 时，二极管截止

u_i 处于负半周期时，二极管导通

输出波形：



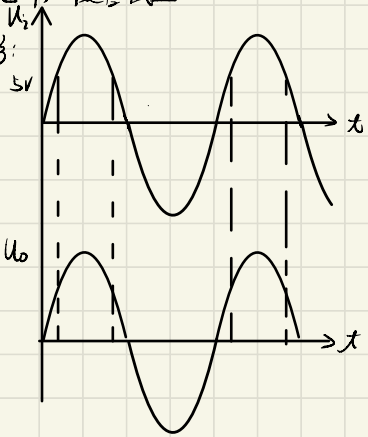
传输特性曲线



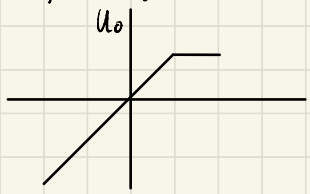
(b) 当 u_i 处于正周期且 $u_i > 5V$，二极管导通

此时二极管截止

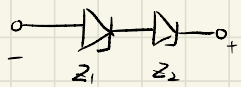
输出波形：



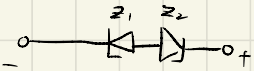
传输特性曲线



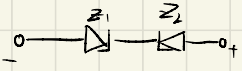
1-9 串联：



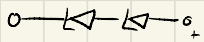
15 V



9.7V

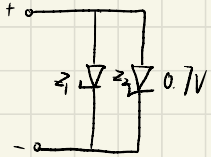


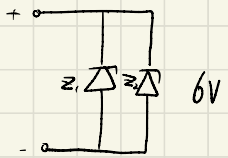
6.7V

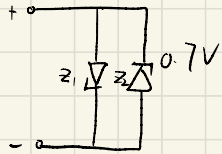


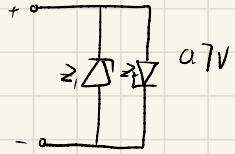
1.4V

并联：









1-10 解：(1) 令 $U_o = U_z = 6V$

则 $I_o = \frac{U_z}{R_L} = 6mA$

$I = \frac{U_i - U_z}{R} = 28mA$

$\therefore I_z = 22mA$　　$I_{Zmax} = \frac{P_{Zmax}}{U_z} \approx 333mA$

$\therefore I_{Zmax} > I_z > I_{Zmin}$　$\therefore$ 稳压管正常工作　$\therefore U_o = 6V$

(2) 令 $U_o = U_z = 6V$

$I_o = 60mA > I = \frac{U_i - U_z}{R} = 28mA$

$\therefore$ 假设不对，稳压管异常

(3) $I_z = I = 28mA$

$I_{Zmin} < I_z < I_{Zmax}$　$\therefore$ 正常工作

(4) $I = \frac{U - U_z}{R} = 2mA$

$\therefore I_z < I < I_{Zmax}$　$\therefore$ 不正常工作

思考题：·加正向电压时，内外电场方向相反，多子扩散 >> 漂移，形成正向电流。

而加反向电压时，内外电场同向，耗尽层变宽，漂移 >> 扩散，少子运动不形成电流

·当电压超过击穿电压时

·温度↑　二极管正向曲线左移，反向曲线下移

击穿电压减小