06011909　　13201910915　　章子轩

1-3 ① PN结的导通就是在PN结上外加一电压，如果P型接正极，N型接负极，电流便从P型流向N型，空穴和电子都向界面流动，使空间电荷区变窄，甚至消失，电流可以顺利通过。如果N型接外加电压正极，P型接负极，则空穴和电子都向远离界面的方向运动，使空间电荷区变宽，电流不能通过，这是PN结的截止。所以PN结具有单向导电性

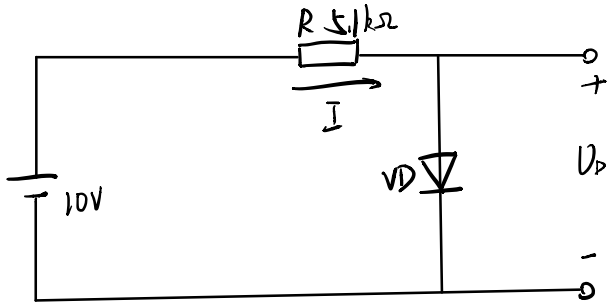
② 施加于PN结的频率过高，PN结相当于电容，无单向导电性

施加于PN结的反向电压过高，导致PN结反向击穿，PN结反向导电

③ 温度对正向特性、反向特性影响不大

温度对击穿特性有影响

1-6

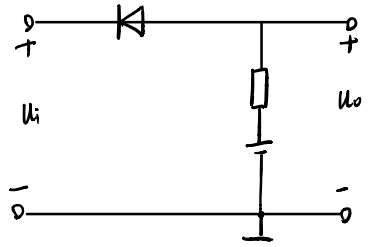



(1) ∵当U大于导通电压，二极管导通，$V_o = V_{on}$

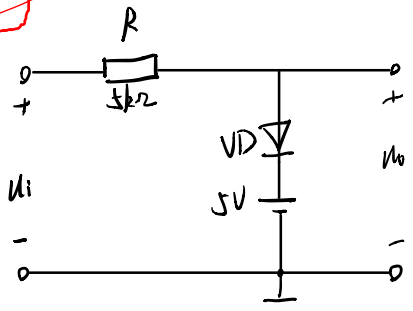
$\therefore I = \frac{10}{5.1k\Omega} = 1.9mA$

(2) 温度升高时，I减小，$V_o$增大

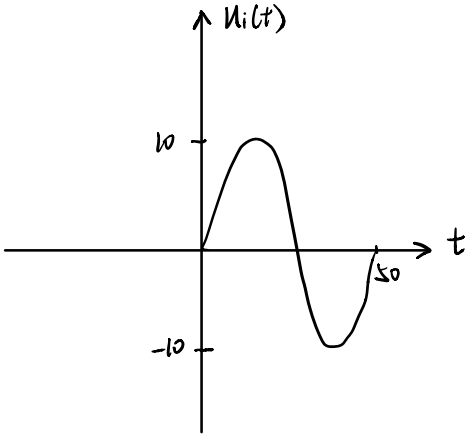
1-8




a)




b)

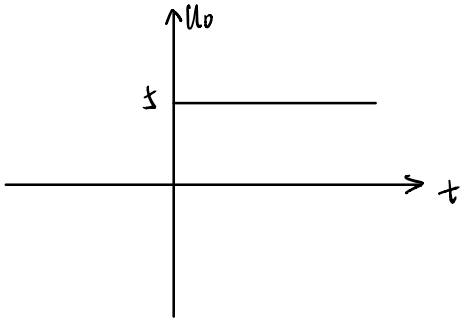


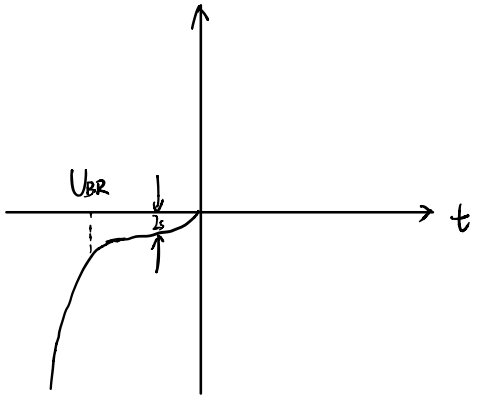

a) 串联限幅电路

当 $u_i$ 大于导通电压，$u_o = u_i - u_{on}$

但二极管不导通

∴ $u_o = 5V$

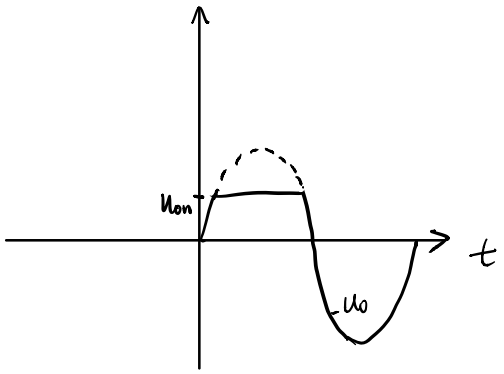


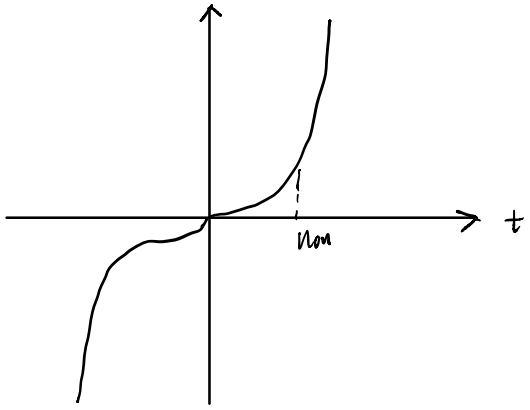




b) 并联限幅电路

当 $u_i$ 大于导通电压，$u_o = u_{on} + 5$

当 $u_i$ 小于导通电压，$u_o = u_i - 5$



1-9 ① 串联 两种稳压值

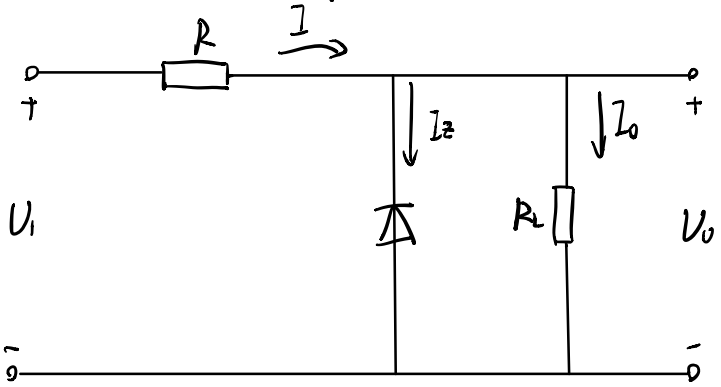
同向串联时 稳压值为 $6+9=15V$

反向串联时 $6+0.7=6.7V$ 和 $9+0.7=9.7V$

② 并联 同向并联时 $6V$

反向并联时 $0.7V$

1-10




(1) ∵ 稳压管稳压值为 $6V$

∴ $U_0=6V$

∴ $I_0=\frac{U_0}{R_L}=\frac{6}{1000}=6mA$

$I=\frac{(U_I-U_0)}{R}=\frac{14}{500}=28mA$

∴ $I_Z=I-I_0=28-6=22mA$

∴ 二极管导通

∴ $U_0=6V$

(2) ∵ 稳压管稳压值为 $6V$

∴ $U_0=6V$

∴ $I_0=\frac{U_0}{R_L}=\frac{6}{100}=60mA$

$I=\frac{(U_I-U_0)}{R}=\frac{14}{500}=28mA$

∴ 二极管不导通

∴ 两电阻分流

$U_0=20\times\frac{1}{6}=\frac{10}{3}V$

(3) $I = \frac{P}{U} = \frac{200mW}{6V} = 33mA$

$I = \frac{(20-6)}{500} = 28mA$

$28mA < 33mA$

∴稳压性能好

(4) $I = \frac{7-6}{500} = 2mA$

$I_0 = \frac{6}{R_L}$

$2mA < 10mA$

∴稳压性能不好