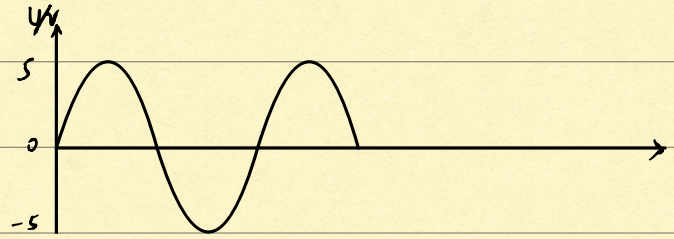
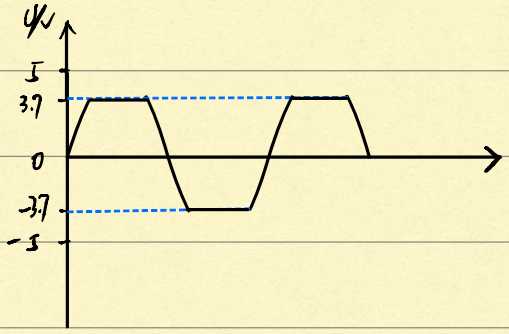
1.3





1.4. $i_D = \frac{U-0.7}{R} = 2.6\ mA$ $\quad r_d = \frac{U_T}{i_D} = 10\Omega$.

$i_d = \frac{u_d}{r_d} = \sin \omega t\ (mA)$ $\quad \therefore |i_d| = 1\ mA$

1.6. (1) $U_I = 10V$. $\quad U_{RL} = \frac{10}{3}V$ $\quad \because U_{RL} < U_Z$ $\quad \therefore U_O = \frac{10}{3}V$

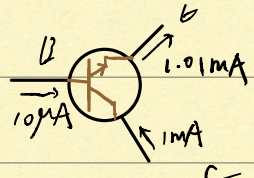
$U_I = 15V$ $\quad U_{RL} = 5V$ $\quad \because I_{DZ} = I_R - I_{RL} \to I_{Zmin}$ $\quad \therefore U_O = 5V$

$U_I = 35V$ $\quad U_{RL} = \frac{35}{3}V$ $\quad \because U_{RL} > U_Z$ $\quad \therefore U_O = 6V$.

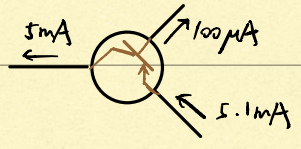
$I_{DZ} = I_R - I_{RL} = 29mA - 12mA = 17mA < I_{Zmax}$ $\quad \therefore U_O = 6V$

(2) $I_{DZ} = (U_I - U_Z)/R = 29mA > 25mA = I_{Zmax}$ 稳压管会损坏

1.8

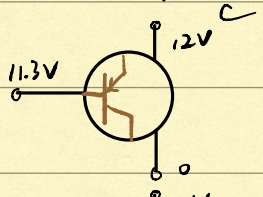


$\beta = 100$

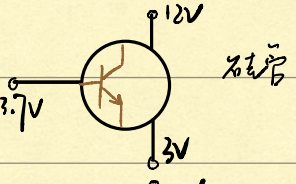


$\beta = 50$

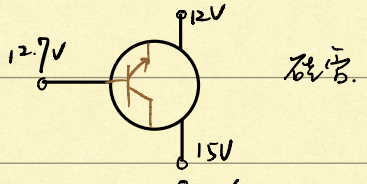
1.9



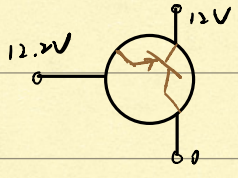
硅管



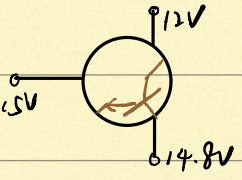
硅管



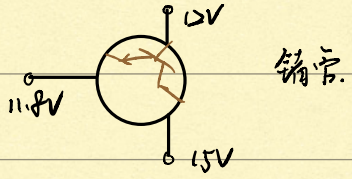
硅管.



锗管



锗管



锗管.

1.10. ① $V_{BB} = 0V$ 时. T截止. $u_O = 12V$

② $V_{BB} = 1V$ 时. 发射结正偏. 集电结反偏, T放大 $\quad I_B = 0.6 \times 10^{-4} A$.

$\therefore I_C = 3mA$. $\quad \therefore u_O = V_{CC} - I_C \cdot R_C = 9V$

③ $V_{BB} = 3V$ 时. $I_B = 4.6 \times 10^{-4} A$ 考虑大. 则 $I_C = \beta I_B = 23mA$ $\quad u_O < U_{BE}$

$\therefore$ 在饱和区. $u_O = U_{CE} = 0.7V$

补.1.① $V_1=V_2=0$ 设D_3反偏 $I_{D_3}=0A$ $\begin{cases} 10-9.5\times10^3\cdot I=V_0 \\ \frac{V_0-0.6}{0.5\times10^3}\times2=I \end{cases}$ ∴解之 $\begin{cases} V_0=1.13 \\ I=2.12\times10^{-3}A \end{cases}$

∵ $V_0<5V$ ∴ $I_{D_3}>0$. D_3正偏 可行. $V_0=4.4V$.

∴ $I=5.9\times10^{-4}A$. $I_{D_1}=I_{D_2}=7.6\times10^{-3}A$ ∴ $I_{D_3}=1.46\times10^{-2}A$

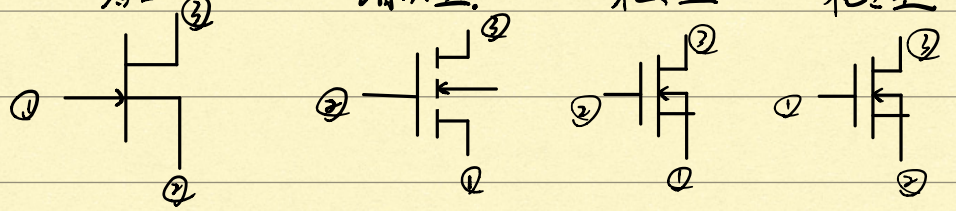
② $V_1=5V$. $V_2=2V$ D_3为反偏 ∴ $I_{D_3}=0A$

∴ $\frac{10-V_0}{9.5\times10^3}=\frac{V_0-5.6}{0.5\times10^3}+\frac{V_0-2.6}{0.5\times10^3}$ ∴ $V_0=9.25V$ ∴ D_3正偏. D_1反偏

∴ $V_0=4.4V$ $I=5.9\times10^{-4}A$. $I_{D_2}=3.6\times10^{-3}A$ ∴ $I_{D_3}=3.01\times10^{-3}A$.

∴ $I_{D_1}=0$.

T1.13 结型 增强型 耗尽型 耗尽型



T1.14 $u_1=4V$时. 截止区 $u_1=8V$时. 恒流区 $u_1=12V$时. 可变电阻区

T1.15 (a) 有可能 (b) 不可能 (c) 不可能 (d) 有可能