

日期: /

Boost



on



off



$$\text{On: } \frac{di}{dt} = \frac{V_{in}}{L}$$

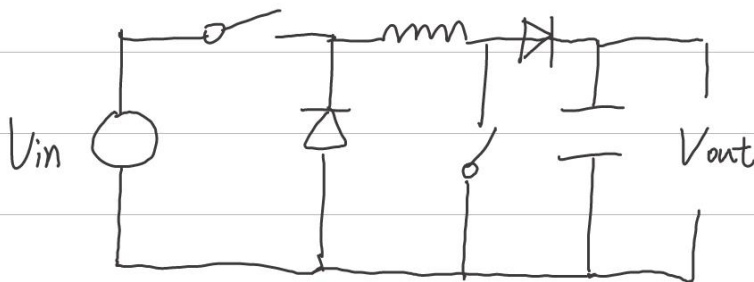
$$\text{off: } \frac{di}{dt} = \frac{V_{out} - V_{in}}{L}$$

$$\frac{V_{in} T_{on}}{L} = \frac{(V_{out} - V_{in})}{L} T_{off}$$

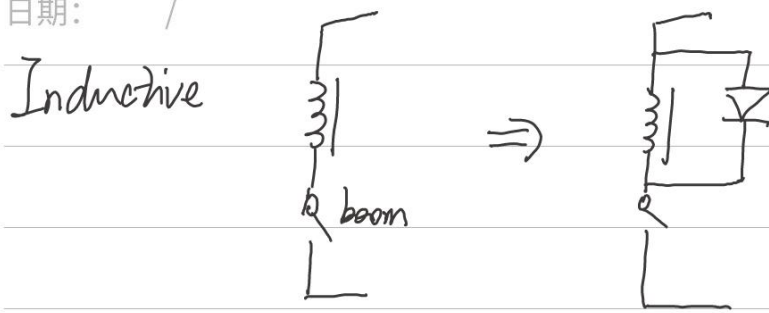
$$\frac{V_{out}}{V_{in}} = \frac{1}{1 - D}$$

$$\frac{V_{out}}{V_{in}} = 1/(1-D)$$

Buck-Boost



日期: /



$$Db = 10 \lg \left(\frac{P}{P_0} \right)$$

$$\text{Decade} = \lg(f_2/f_1) \quad \text{Octave} = \log_2(f_2/f_1)$$

Band-Pass filter



$$\text{当 } \omega = \sqrt{\frac{1}{LC}}, \quad Z \rightarrow \infty$$

该信号无损通过
几乎



$$Z = \omega L j - \frac{1}{\omega C} j$$

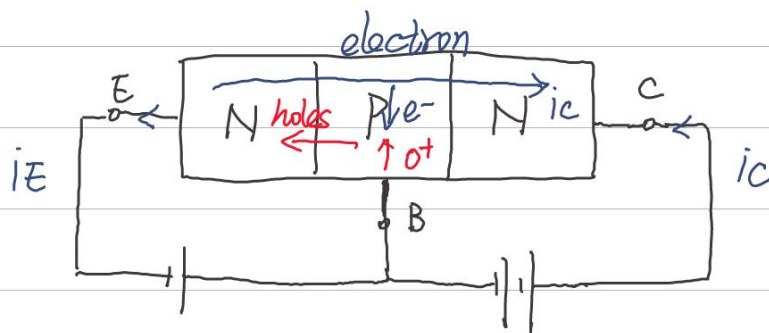
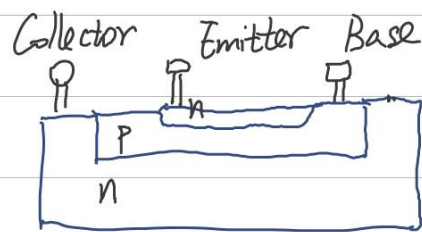
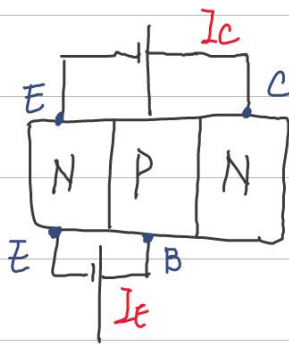
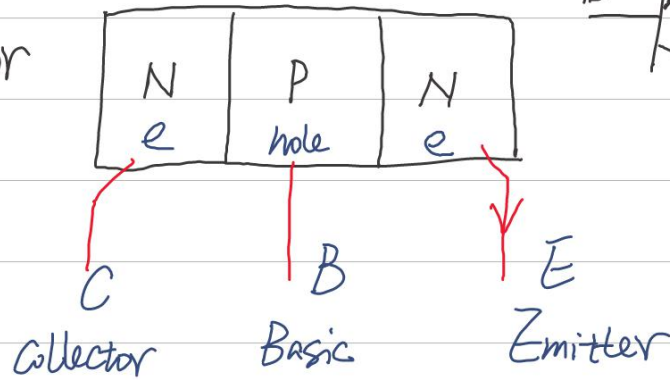
$$= j \left(\omega L - \frac{1}{\omega C} \right)$$

当 $\omega = \sqrt{\frac{1}{LC}}$ 该信号几乎不通过

日期: /

BJT

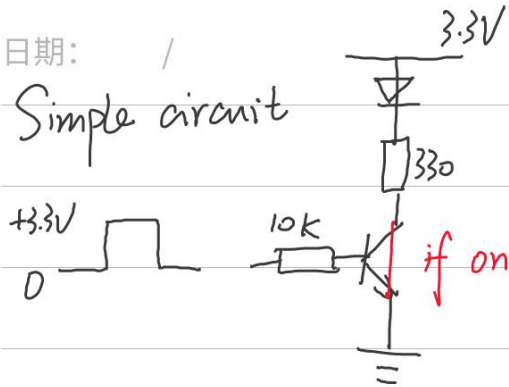
Transistor
晶体管



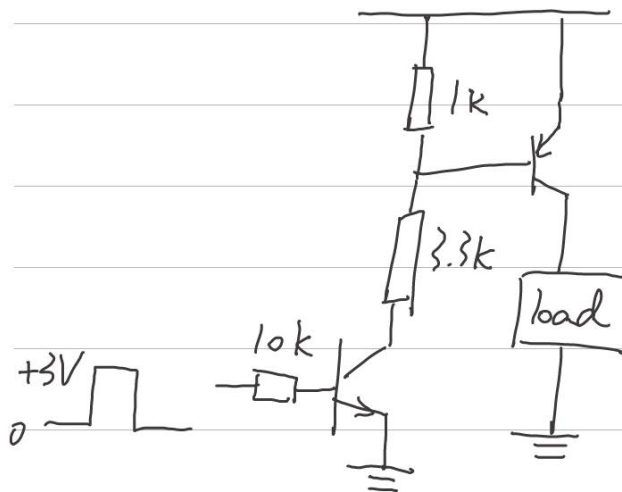
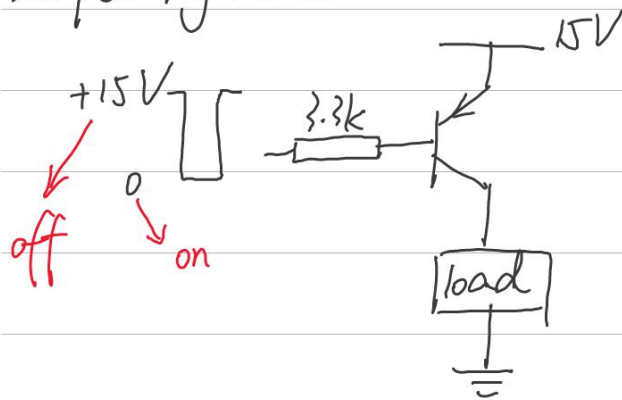
$$I_C = h_{FE} I_B = \beta I_B$$

日期: /

Simple circuit



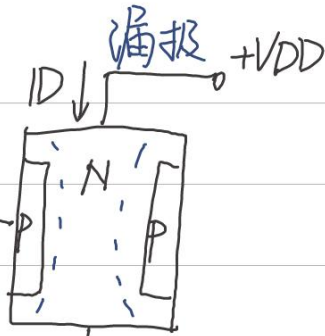
simple high side circuit



日期: /

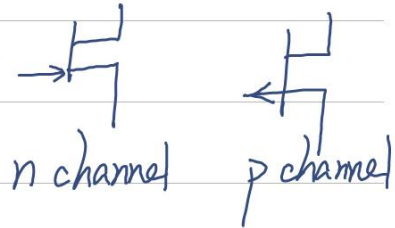
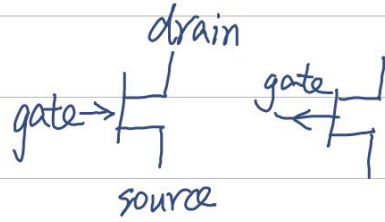
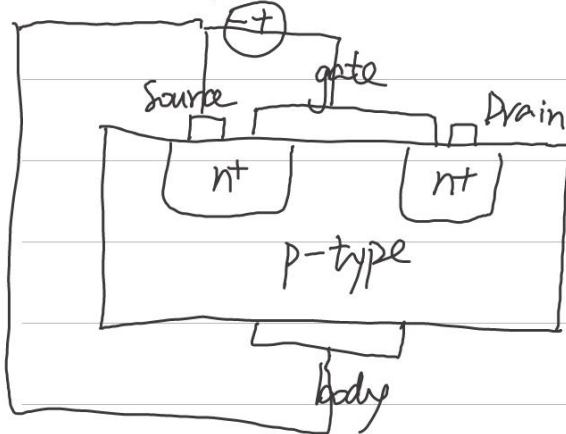
JFET

G 栅极



源极

$$V_{GS} < V_{threshold}$$



N沟道工作时

$V_{GS} < 0$, PN结反偏

沟道电阻 \uparrow $i_D \downarrow$

$i_D = 0$ 时 V_{GS} 称夹断电压 V_p

