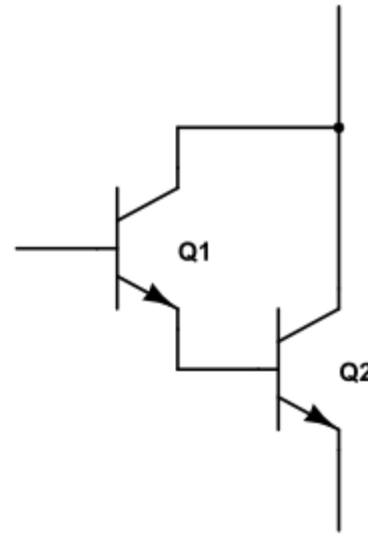
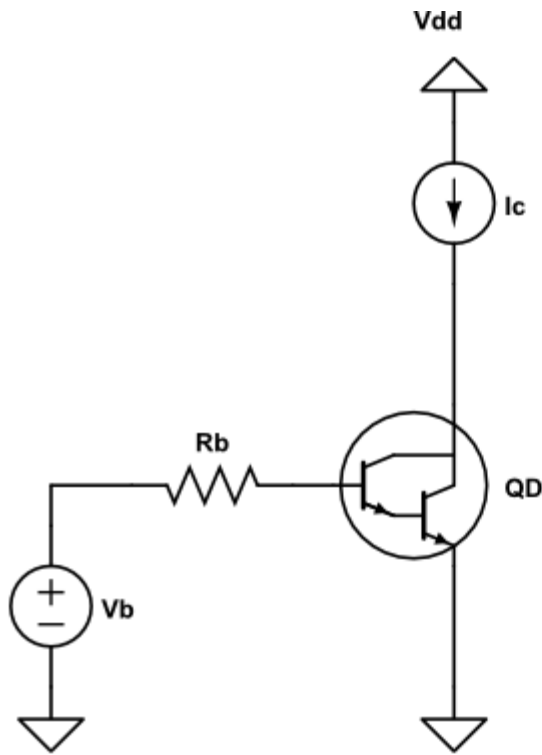


$$I_C = \beta I_B$$

$$I_E = (\beta + 1) I_B$$

$$V_{CE-Min} = V_{CE-Sat}$$

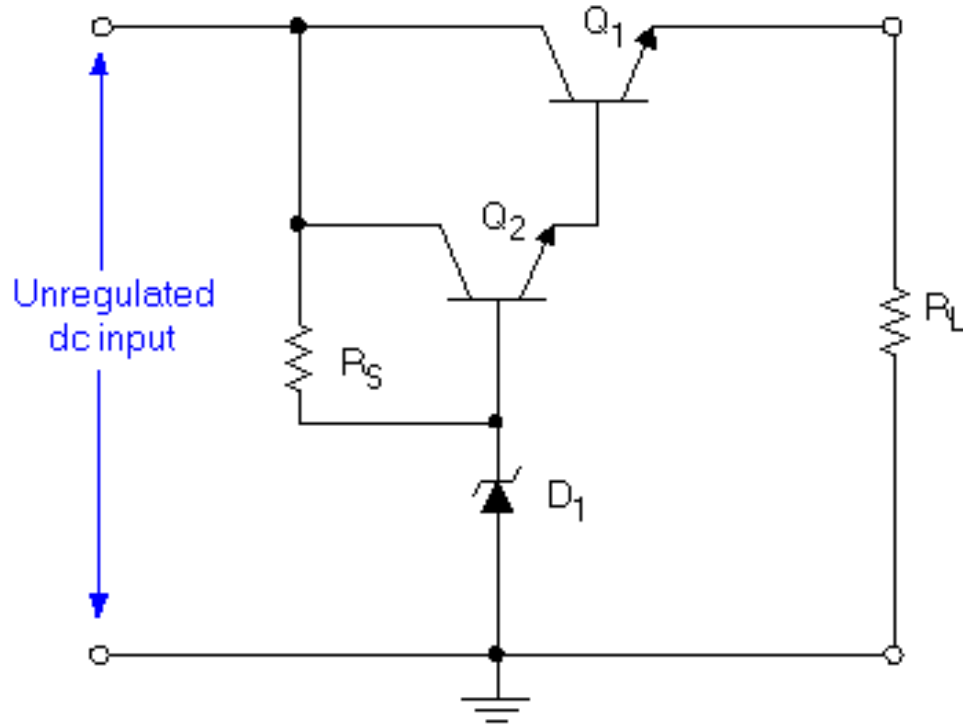


$$I_C = (\beta_1 + \beta_2 + \beta_1\beta_2)I_B$$

$$\beta_{Eff} \approx \beta_1\beta_2$$

$$V_{BE} = V_{BE1} + V_{BE2}$$

$$V_{CE-Min} = V_{BE} + V_{CE-Sat}$$



$$V_{Out} = V_{D1} - 2V_{BE}$$