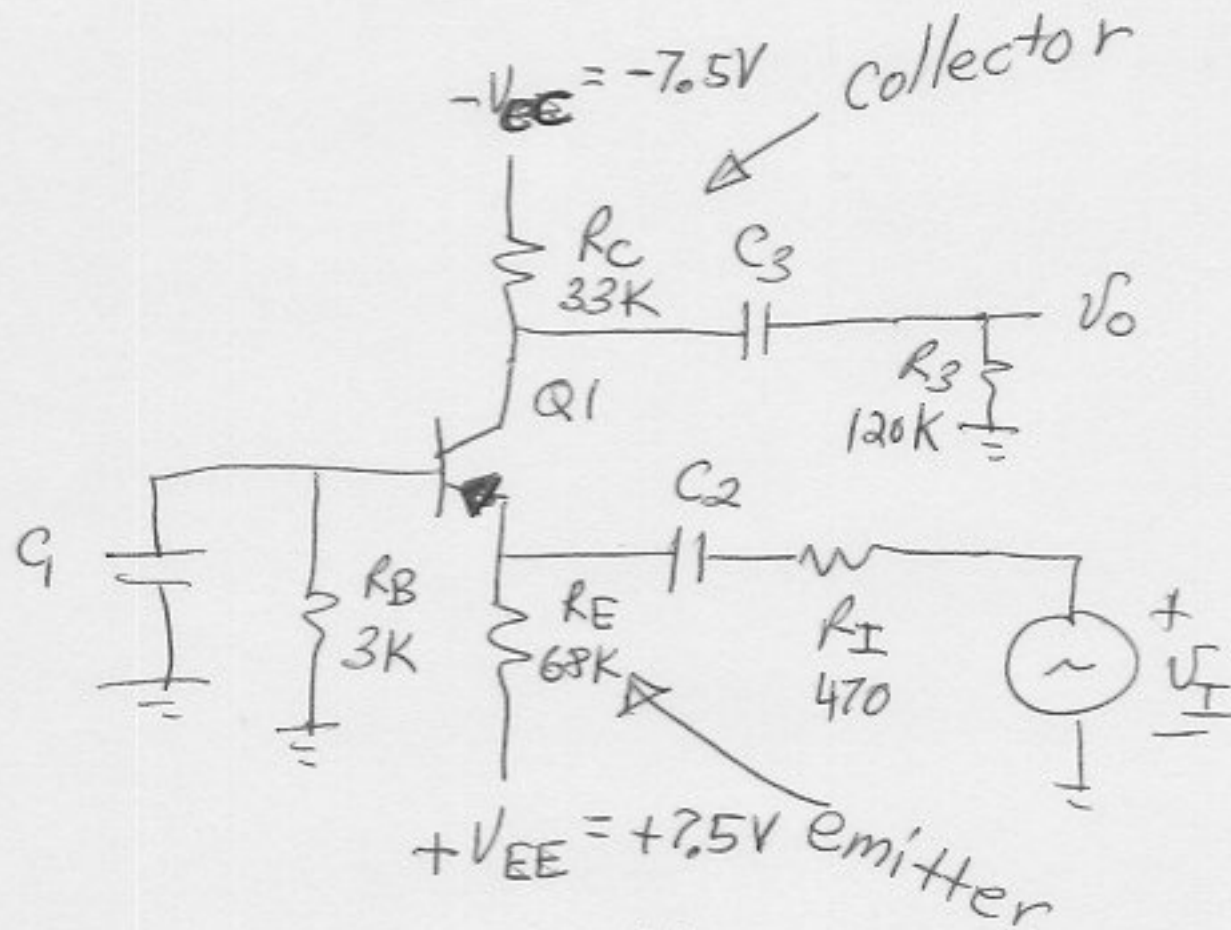


Jaeger - 3rd ed

Q1 is  
pnp

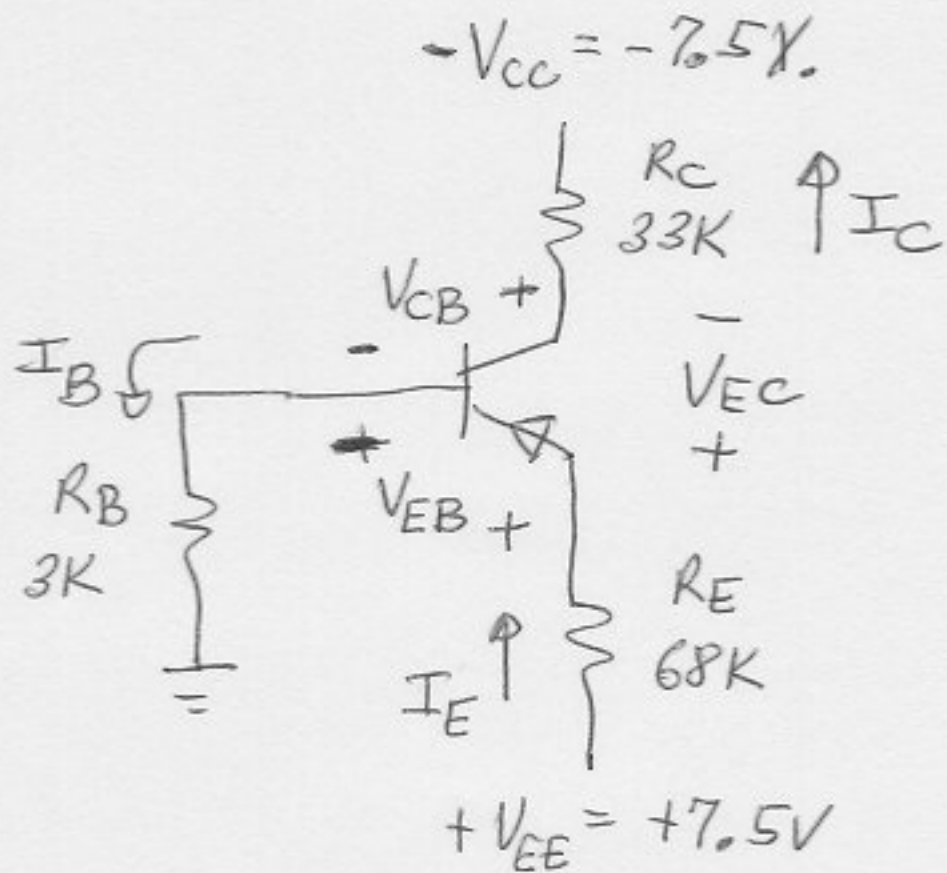
$\beta_F = 65$

13.4  
13.19



- (a)  $C_1$  is a base bypass capacitor.  
 $C_2$  and  $C_3$  are signal coupling (dc blocking) capacitors
- (b)  $V_B$  contains a dc component, but zero signal component.

dc equivalent circuit



13.4/19 cont

dc analysis

emitter-base loop equation (KVL)

$$+V_{EE} - I_E R_E - V_{EB} - I_B R_B = 0$$

$$\text{with } V_{EB} \approx +0.7 \text{ and } I_B = \frac{I_E}{1+\beta_F}$$

$$\beta_F = 65$$

$$I_E = \frac{V_{EE} - V_{EB}}{R_E + \frac{R_B}{1+\beta_F}} = 99.9 \mu A$$

$$I_C = \frac{\beta_F}{1+\beta_F} I_E = 98 \mu A$$

$$I_B = \frac{I_C}{\beta_F} = 1.5 \mu A$$

$$V_{EC} = V_{EE} - I_E R_E - I_C R_C - (-V_{CC}) = +5.0 V,$$

$$V_{CB} = V_{EB} - V_{EC} = -4.3 V. \left( \begin{array}{l} \text{reverse bias} \\ \text{active mode} \end{array} \right)$$

