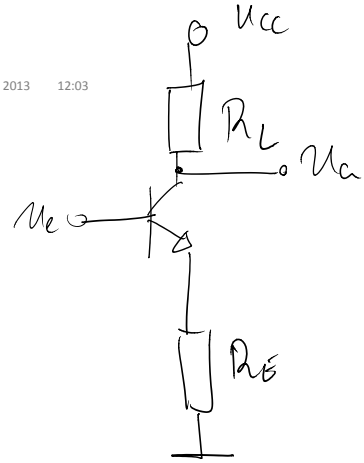
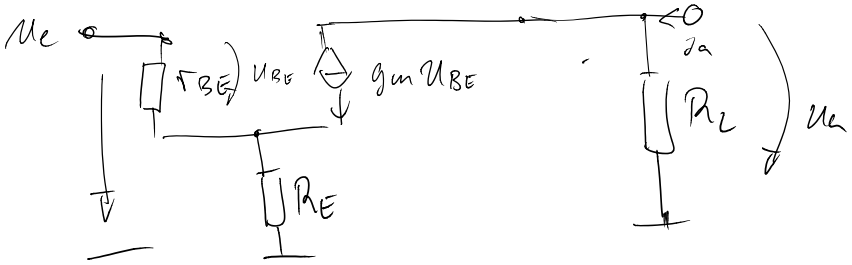
Mittwoch, 28. August 2013 12:03





$$\left.\frac{U_a}{U_e}\right|_{I_a=0} = -R_L g_m U_{BE}$$

$$U_{BE} = \frac{r_{BE}}{r_{BE}+R_E} U_e - g_m U_{BE} \cdot \frac{R_E}{R_E + r_{BE}} r_{BE}$$

$$U_{BE}\left[1 + g_m \frac{R_E r_{BE}}{R_E + r_{BE}}\right] = \frac{r_{BE}}{r_{BE}+R_E} U_e$$

$$U_{BE}\left[\frac{R_E + r_{BE} + g_m R_E r_{BE}}{R_E + r_{BE}}\right] = \frac{r_{BE}}{r_{BE}+R_E} U_e$$

$$U_{BE} = \frac{r_{BE}}{R_E + r_{BE} + g_m R_E r_{BE}} U_e$$

$$v = -R_L \frac{g_m r_{BE}}{R_E + r_{BE} + g_m R_E r_{BE}}$$

$$g_m r_{BE} = \frac{I_{CA}}{U_T} \cdot \frac{U_T}{I_{CA}} \cdot b = b$$

$$= -R_L \frac{b}{R_E[1+b] + r_{BE}}$$

$b \gg 1 \quad r_{BE} \ll b R_E$

$$\rightarrow v \approx -\frac{R_L b}{R_E b} = -\frac{R_L}{R_E}$$

$$\rightarrow \quad v \approx - \frac{R_L b}{b R_E} = - \frac{R_L}{R_E}$$