$U_0 = 12V$, $U_{C,A} = \frac{U_0}{2} = 6V$ $\quad f_{min} = 500\,Hz$, $I_{C,A} = 2mA$, $v = 5$

Aus Datenblatt:

$B = h_{FE} = 110$, $\beta = h_{fe} = 250$, $r_{BE} = h_{ie} = 4\,k\Omega$, $U_{BE} = V_{BE(on)} = 650\,mV$

$U_0 = U_{RC} + U_{C,A}$

$R_C = \frac{U_{RC}}{I_{CA}} = \frac{U_0 - U_{C,A}}{I_{C,A}} = \frac{6V}{2mA} = \underline{\underline{3\,k\Omega}} \quad \rightsquigarrow v = \frac{R_C}{R_E} \rightsquigarrow R_E \approx \frac{R_C}{v} = \underline{\underline{0{,}6\,k\Omega}}$

$U_{B,A} = U_{BE} + U_{RE} = 0{,}65V + R_E I_{C,A} = \underline{\underline{1{,}85\,V}} \rightsquigarrow \frac{R_2}{R_1} = \frac{U_{B,A}}{U_0 - U_{B,A}} = \frac{1{,}85}{10{,}15} \approx \underline{\underline{0{,}18}}$

$I_B = \frac{I_C}{B} \approx \frac{I_C}{\beta} \rightsquigarrow I_2 \approx 10\, I_B = 10\,\frac{I_C}{\beta} \Rightarrow R_2 = \frac{U_{B,A}}{I_2} = \frac{1{,}85V}{2mA}\,\frac{250}{10} \approx \underline{\underline{23\,k\Omega}}$

$\rightsquigarrow R_1 \approx \underline{\underline{130\,k\Omega}}$

Werte aus E12-Reihe:

$R_C = 2{,}7\,k\Omega$ $\quad R_1 = 120\,k\Omega$, $R_2 = 22\,k\Omega$ $\quad R_E = 560\,\Omega$ $\quad R_E' = 0$ (kurzgeschlossen)

$\Rightarrow v \approx 4{,}83$, $U_{C,A} = 5{,}4V$; $U_{B,A} = 1{,}77V$, $r_a \approx R_C = 2{,}7\,k\Omega$

$r_e = \left[\frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{r_{BE} + \beta\left(\frac{1}{R_E} + \underbrace{\frac{1}{R_E'}}_{R_E' \to \infty \,\to\, 0}\right)^{-1}}\right]^{-1} = 3.3\,k\Omega$

$C_{a/e} \geq \frac{10}{\omega_{min} r_{a/e}} = \frac{10}{2\pi f_{min} r_{a/e}} \Rightarrow C_e \geq \underline{5\,\mu F}$, $C_a \geq \underline{6\,\mu F}$

$C_E \gg \frac{\beta}{2\pi f_{min} r_{BE}} = \underline{\underline{100\,\mu F}}$

Werte aus E3-Reihe: $C_a = C_e = 4{,}7\,\mu F$