

Beispiel 1: Brückensymmetrischer OT

$$U_T^+ = 4V$$

$$V_{CC} = \pm 12V$$

$$U_T^- = -1V$$

$$\pm U_{SAT} = 11,3V$$

$$\Delta U_T = U_T^+ \Big|_{U_V=0} - U_T^- \Big|_{U_V=0} = U_V \frac{R_1}{R_1+R_2} + U_{SAT}^+ \frac{R_2}{R_1+R_2} - U_{SAT}^- \frac{R_2}{R_1+R_2}$$

$$\Delta U_T = U_V \frac{R_1}{R_1+R_2} = \frac{U_T^+ + U_T^-}{2}$$

$$U_H = U_T^+ - U_T^- = U_V \frac{R_1}{R_1+R_2} + U_{SAT}^+ \frac{R_2}{R_1+R_2} - U_V \frac{R_1}{R_1+R_2} - U_{SAT}^- \frac{R_2}{R_1+R_2}$$

$$U_{SAT}^+ = U_{SAT} = \frac{2 U_{SAT} R_2}{R_1 + R_2}$$

$$U_{SAT}^- = -U_{SAT}$$

$$U_H (R_1 + R_2) = 2 U_{SAT} R_2$$

$$U_H R_1 + U_H R_2 = 2 U_{SAT} R_2$$

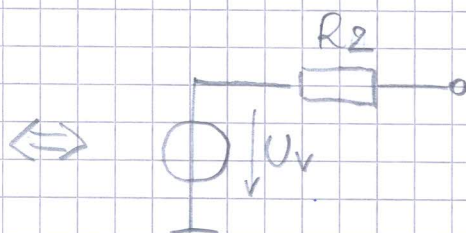
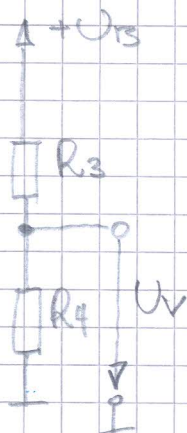
$$R_2 = \frac{U_H \cdot R_1}{2 U_{SAT} - U_H}$$

$$R_1 = 10k\Omega$$

$$R_2 = \frac{5V \cdot 10k\Omega}{2 \cdot 11,3V - 5V} = 2840\Omega$$

$$\Delta U_T = U_V \frac{R_1}{R_1+R_2} = \frac{U_T^+ + U_T^-}{2}$$

$$U_V = \frac{(U_T^+ + U_T^-)(R_1 + R_2)}{2 R_1} = \frac{(4 + (-1))(12840)}{2 \cdot 10k} = 1,92V$$



$$R_2 = \frac{R_3 \cdot R_4}{R_3 + R_4}$$

$$R_2 = 2840\Omega$$

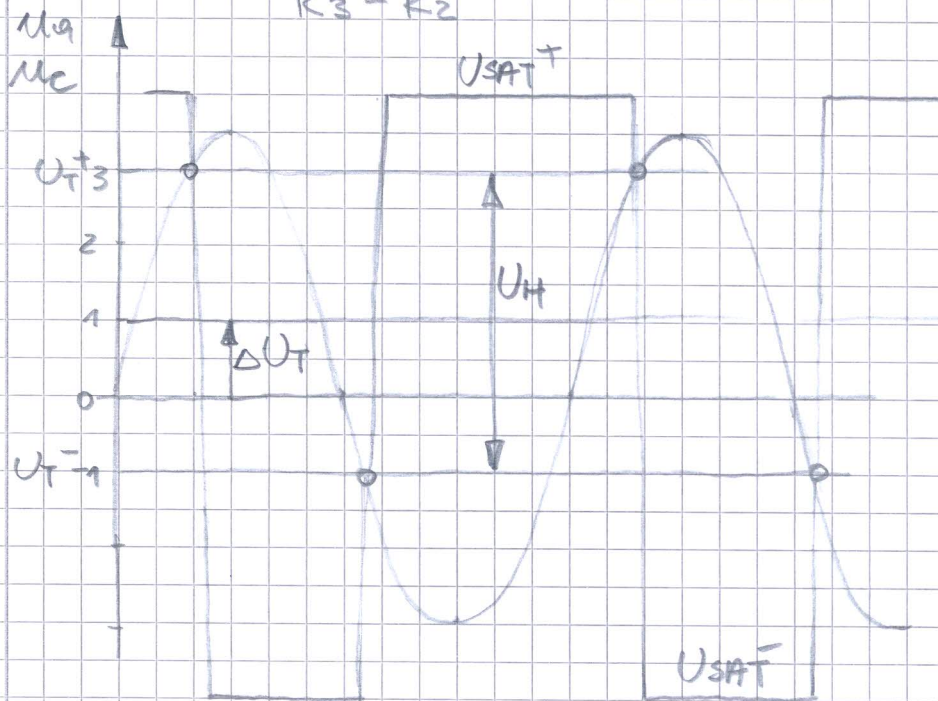
$$\frac{U_V}{U_{BS}} = \frac{R_4}{R_3 + R_4} \rightarrow R_3 + R_4 = \dots$$

$$R_2 = \frac{R_3 \cdot R_4}{R_3 + R_4} \rightarrow R_3 + R_4 = \dots$$

$$\left. \begin{aligned} R_3 + R_4 &= \frac{U_B \cdot R_4}{U_V} \\ R_3 + R_4 &= \frac{R_3 \cdot R_4}{R_2} \end{aligned} \right\} R_3 = \frac{U_B}{U_V} R_2$$

$$R_3 = \frac{12V}{1,92V} \cdot 2840 = \underline{17750 \Omega}$$

$$R_4 = \frac{R_2 \cdot R_3}{R_3 - R_2} = \underline{3381 \Omega}$$



$$U_H = U_T^+ - U_T^- = 3V - (-1V) = 4V$$

$$\Delta U_T = \frac{U_T^+ + U_T^-}{2} \quad \left| \quad U_{SAT}^+ = U_{SAT} = \frac{3V - 1V}{2} = 1V \right.$$

$$U_{SAT}^- = -U_{SAT}$$