

$$\textcircled{1} \quad P_a = 25 \text{ W} = \frac{r_{\text{DSon}}}{3} I_D^2 ; P_{a1} = \frac{25}{3} = 8,33 \text{ W}.$$

$$P_b = \frac{r_{\text{DSon}}}{2} I_D^2 = \frac{75}{2} = 37,5 \text{ W} ; P_{b1} = \frac{37,5}{2} = 18,75 \text{ W}$$

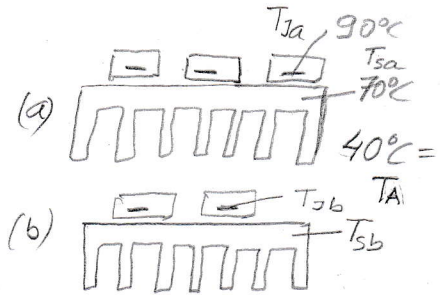
$$R_{\theta SA} = \frac{70 - 40}{25} = 1,2 \text{ K/W}.$$

$$T_{sb} = T_A + R_{\theta SA} \cdot P_b = 40 + 1,2 \cdot 37,5 = 85^\circ \text{C}$$

$$T_{ja} = T_{sa} + R_{\theta JS} \cdot P_{a1} = 90^\circ \text{C}.$$

$$R_{\theta JS} = \frac{90 - 70}{8,33} = 2,4 \text{ K/W}$$

$$T_{jb} = T_{sb} + R_{\theta JS} \cdot P_{b1} = 85 + 2,4 \cdot 18,75 = 130^\circ \text{C}$$



$$\textcircled{2} \quad U_B = \frac{D}{1-D} V_p \Rightarrow D V_p = (1-D) U_B \Rightarrow D(V_p + U_B) = U_B \Rightarrow D = \frac{U_B}{V_p + U_B} = \frac{28}{20 + 28} = 58,3\%$$

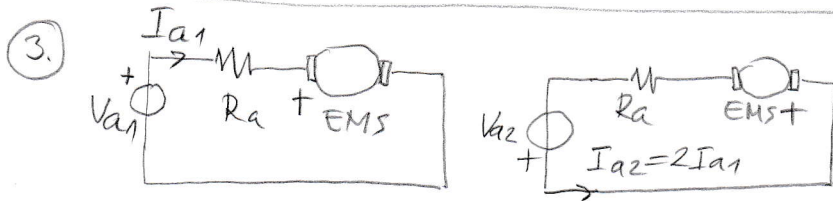
$$U_B I_B = V_p I_p \Rightarrow I_p = \frac{U_B}{V_p} I_B = \frac{28}{20} \cdot 7 = 9,8 \text{ A}$$

$$V_{\text{DSmax}} = V_p + U_B = 20 + 28 = 48 \text{ V}$$

$$I_B = (1-D) I_L \Rightarrow I_L = \frac{I_B}{1-D} = \frac{7}{1-0,583} = 16,8 \text{ A}$$

$$I_{\text{Dmax}} = I_L = 16,8 \text{ A}.$$

$$k = \frac{P_o}{V_{\text{DSmax}} \cdot I_{\text{Dmax}}} = \frac{7 \cdot 28}{48 \cdot 16,8} = 0,243$$



$$V_{a1} = R_a \cdot I_{a1} + \text{EMS}$$

$$V_{a2} = R_a I_{a2} + \text{EMS}$$

$$V_{a1} = R_a \cdot 10 + \text{EMS}$$

$$V_{a2} = R_a \cdot 20 + \text{EMS}$$

$$V_{a1} = 50 \cdot 0,7 - 50 \cdot 0,3 = 20$$

$$20 = 0,6 \cdot 10 + \text{EMS}$$

$$\text{EMS} = 14 \text{ V}$$

$$V_{a2} = 0,6 \cdot 20 + 14 = 28$$

$$V_{a2} = 50 \cdot D_{23} - 50 D_{14}$$

$$V_{a2} = 50 D_{23} - 50(1 - D_{23})$$

$$V_{a2} = 100 D_{23} - 50 = 28$$

$$D_{23} = \frac{78}{100} = 0,78 ; D_{14} = 1 - D_{23} = 0,22$$