

Analog Grundelemente
(Zi:sa. Grav 2)

$$a) I_D = I_{ref} = 50 \mu = \frac{0,5m}{2} (V_{GS} - V_{TH})^2$$

$$V_{GS} \approx 1,45V$$

$$g_{m1} = \beta (V_{GS} - V_{TH}) = 225 \mu S$$

$$r_{o1} = \frac{1}{I_{DS1} \lambda_n} = 2 M\Omega$$

$$r_{o2} = \frac{1}{I_{DS2} \lambda_p} = 1 M\Omega$$

$$K = -g_{m1} \left(\frac{1}{r_{o2}} \parallel \frac{1}{r_{o1}} \right) = -150$$

$$b) I_{ref}^1 = 4 \cdot I_{ref} = 200 \mu$$

$$c) r_{o1}^1 = 0,5 M$$

$$r_{o2}^1 = 0,25 M$$

$$r_o^1 \approx 167 K$$