$v_{GS2} = V_{DD} - v_O$

$$i_D = k_2 \left(V_{DD} - v_O - V_T\right)^2$$

uguagliando: $v_O = \left(V_{DD} - V_T + \sqrt{\frac{k_1}{k_2}}\, V_T\right) - \sqrt{\frac{k_1}{k_2}}\, v_I$

$$A_V = \sqrt{\frac{k_1}{k_2}} = \frac{dV_O}{dV_I}$$

→ stesso risultato come:

$I_D = g_{m2} v_{GS2}$

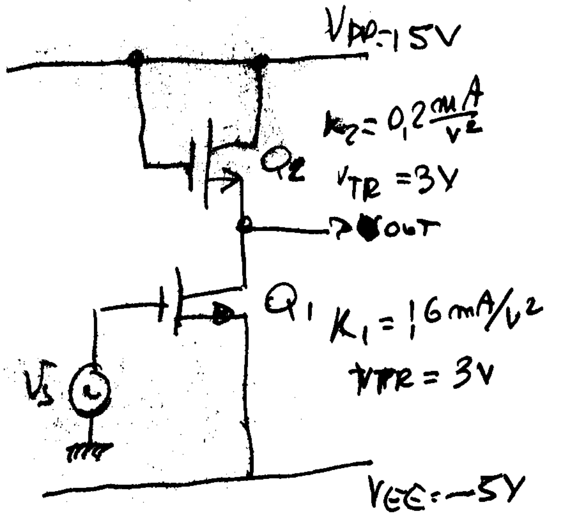
resistenza equivalente di source

$\Downarrow$

$$v_O = g_{m1} v_{gs1} \left[\frac{1}{g_{m2}} \,\|\, r_{o1} \,\|\, r_{o2}\right]$$

$$A_V = \frac{v_o}{v_i} = \frac{g_{m1}}{g_{m2}}$$

Esempio.



$V_{GS1} = 5V$

$I_{D1} = k_1 (V_{GS1} - V_{TR})^2 = 1{,}6\,(5-3)^2 = 6{,}4\,mA$

$$V_{GS2} = \left(\frac{I_{D2}}{k_2}\right)^{1/2} + V_{TR}$$

$$= \left[\left(\frac{6{,}4}{0{,}2}\right)\right]^{1/2} + 3V = 8{,}66\,V$$

$V_{OUT} = V_{DD} - V_{GS2} = 15V - 8{,}66 = 6{,}34V$

$V_{DS1} = V_{OUT} - V_{EE} = 6{,}34 - (-5V) = 11{,}34\,V$

↳ $> V_{GS1} - V_{TR} = 2V$