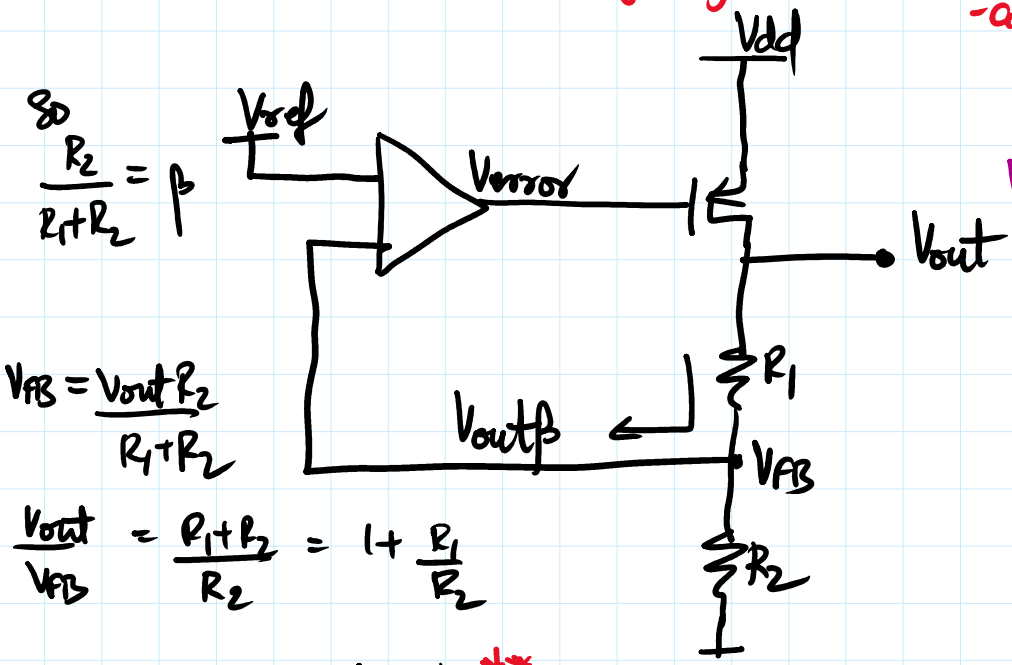
01/6/24
01 June 2024 18:49

|| Namo Vadakkumnathan ||

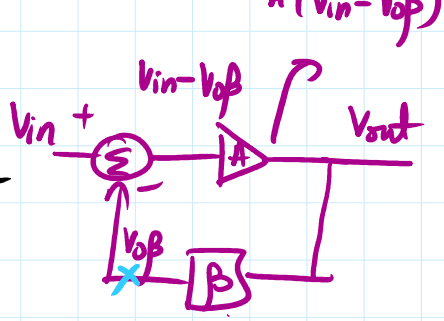
How to assign signs to OPAMP (for opamp to be in -ve feedback)



So $\frac{R_2}{R_1+R_2} = \beta$

$V_{FB} = \frac{V_{out} R_2}{R_1+R_2}$

$\frac{V_{out}}{V_{FB}} = \frac{R_1+R_2}{R_2} = 1 + \frac{R_1}{R_2}$



$\frac{V_{out}}{V_{in}} = \frac{1}{\beta} \frac{A\beta}{1+A\beta}$

If OPAMP in -ve feedback. **

I'll try to make

$V_{ref} - V_{out}\beta = 0$

$A \to \infty$

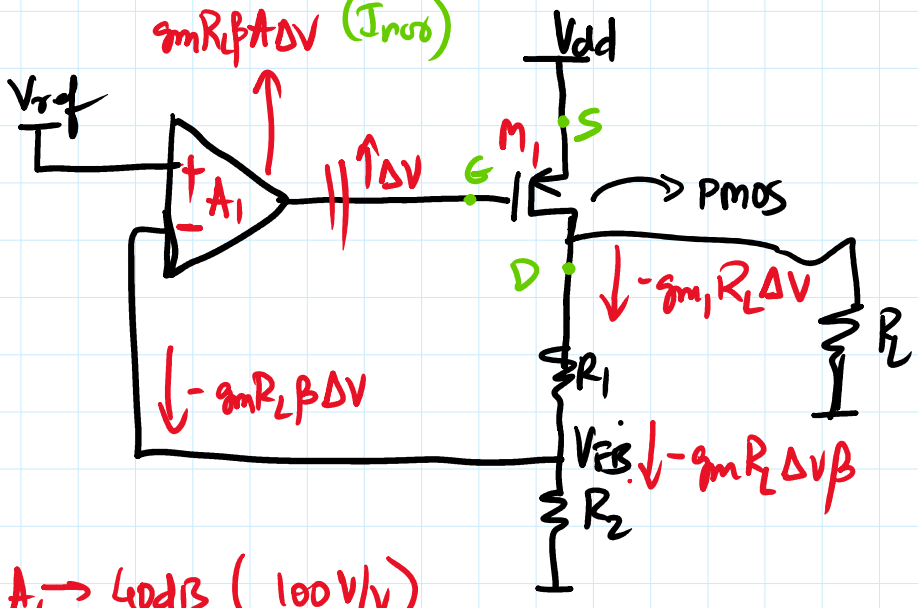
$\frac{V_{out}}{V_{in}} \simeq \frac{1}{\beta}$

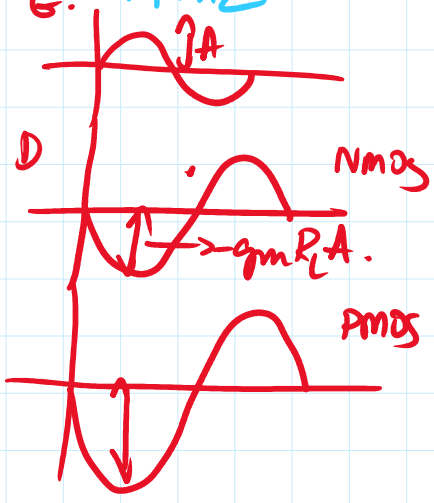
at x, if we measure voltage $V_o(\beta)$

So $V_{out}\left(\frac{R_2}{R_1+R_2}\right) = V_{FB}$

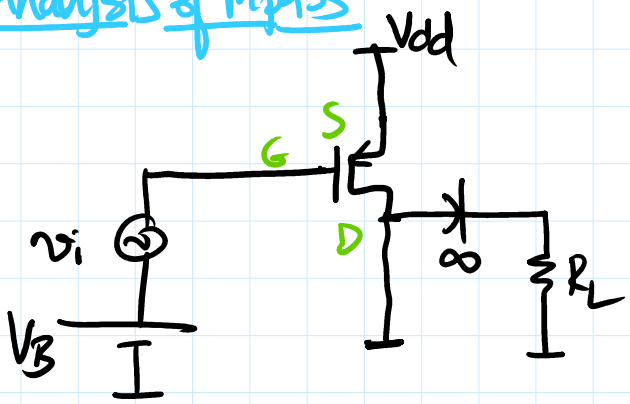
So $\beta = \frac{R_2}{R_1+R_2}$

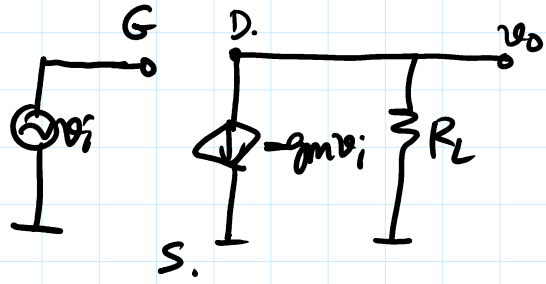
For signs of OPAMP to be in -ve F.B.





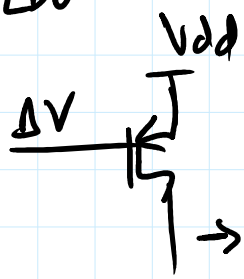
Smallsignal Analysis of Mpass





$v_o = -g_m R_L v_{in}$

In LDO.



$\rightarrow -g_m R_L \Delta V$ ↓ pulling it down.

So signs must be swapped

$\rightarrow -g_m R_L \beta A \Delta V$ (decr) [-veF,B]

ΔV → Test voltage