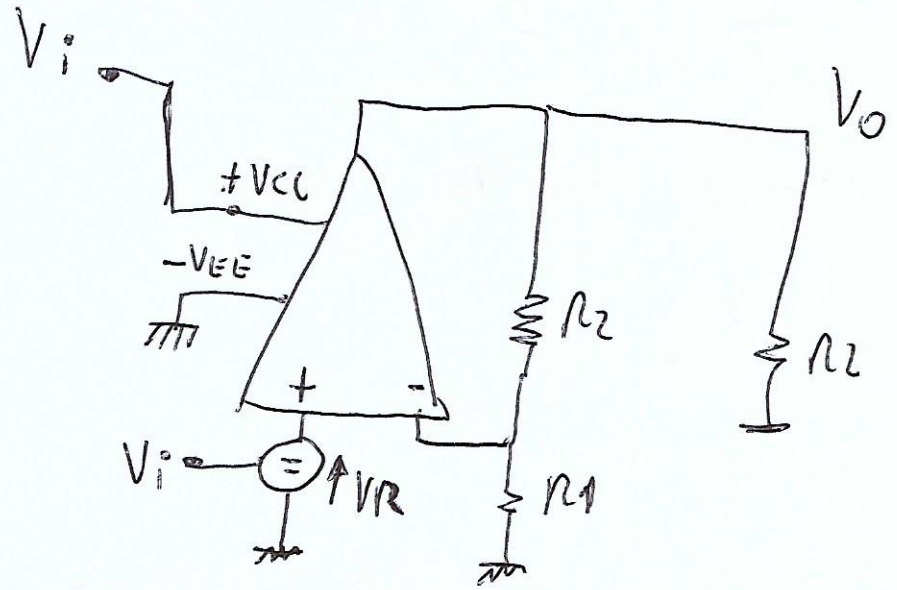
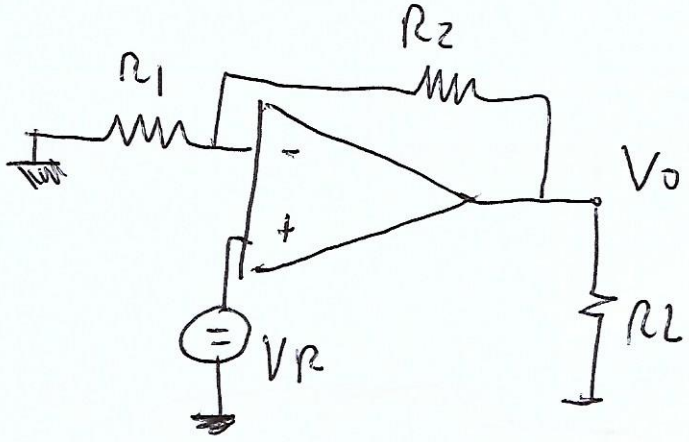
Fuente regulada serie

Con Amplificador Operacional





$$V_o = V_R \left(1 + \frac{R_2}{R_1}\right)$$

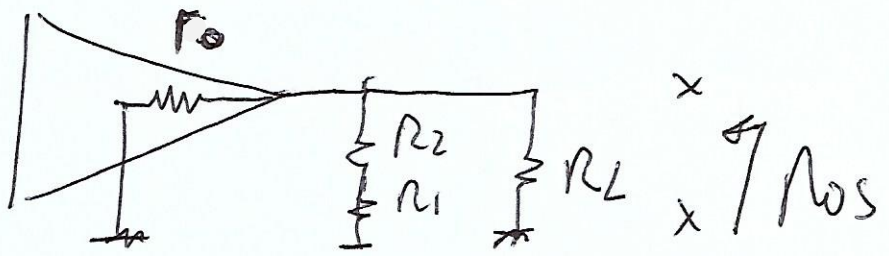
$$V_i \begin{cases} +10\% \\ -15\% \end{cases}$$

$$V_{DO} = V_i - V_o$$

Para regular se considera $V_{i\,min}$

Para calcular disipador se considera $V_{i\,MAX}$

Resistencia de salida



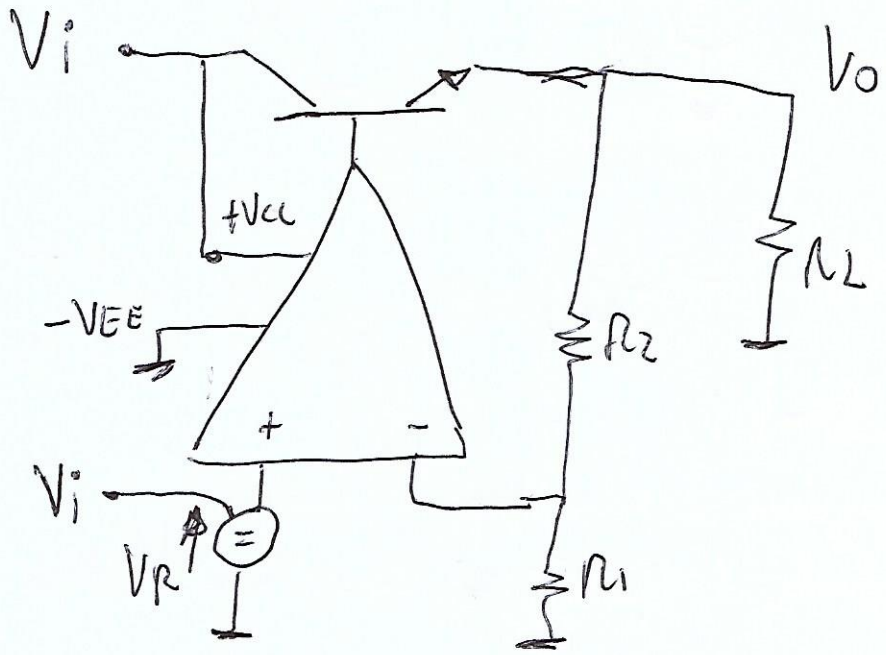
$$R_{os} = R_2 // (R_1 + R_2) // r_o$$

$$R_{osf} = R_{os} / D$$

Si: $R_o = 75\,\Omega$ y $D = 10^4$

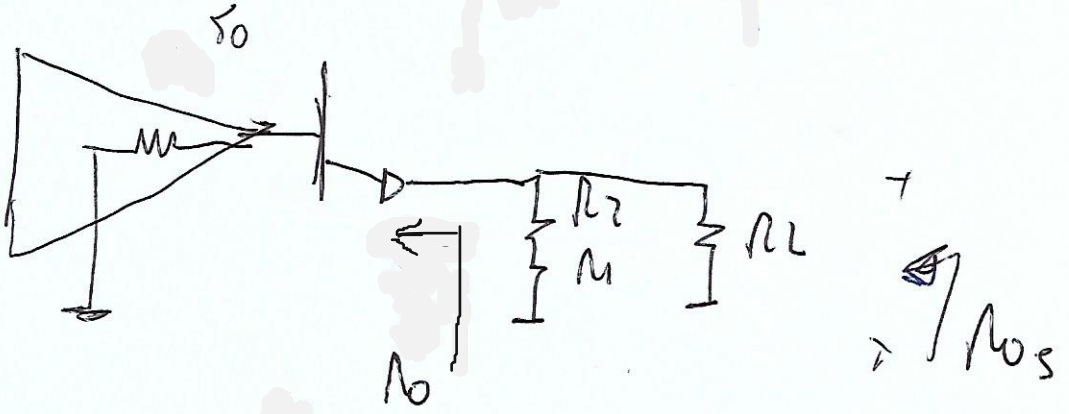
$R_{os} < 75\,\Omega$ ∴ $R_{osf} \leq 7{,}5\ m\Omega$

Con Amplificador Operacional y Transistor de paso



$$V_o = V_R\left(1+\frac{R_2}{R_1}\right)$$

Resistencia de salida



$$R_o = hib + \frac{r_o}{1+hre}$$

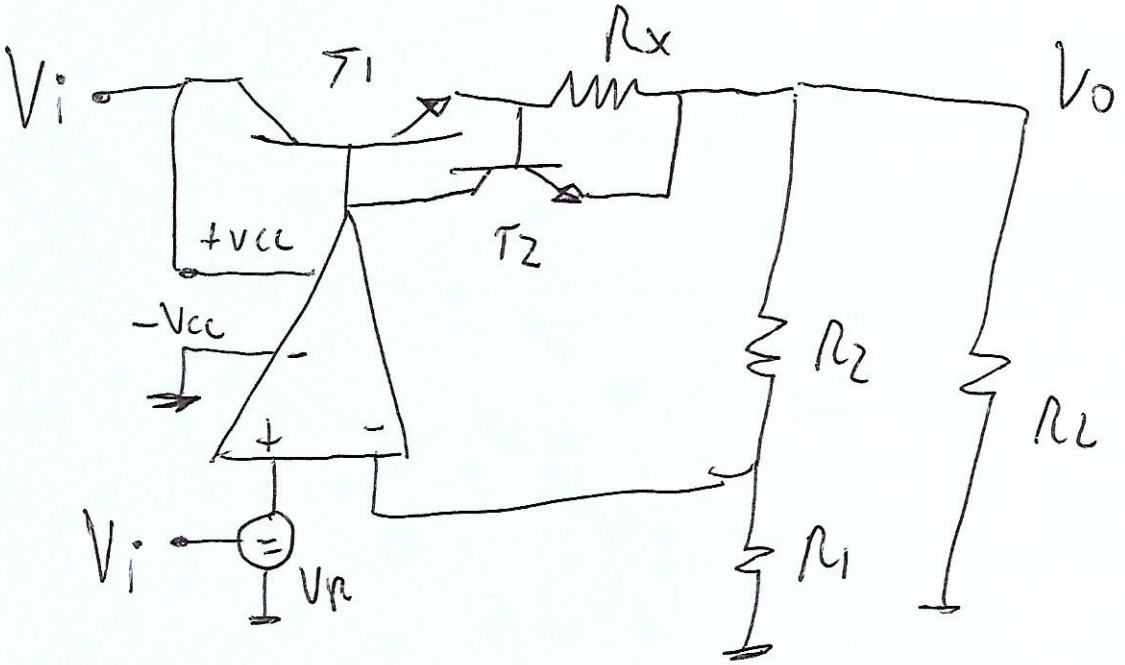
Para 1A $hib = 25m\Omega$ si $r_o = 75\Omega$

si $hre = 100$ $r'o < 1\Omega$

$$R_{os} = R_o // (R_2+R_1) // R_L \simeq R_o \qquad R_{osF} = R_{os}/D$$

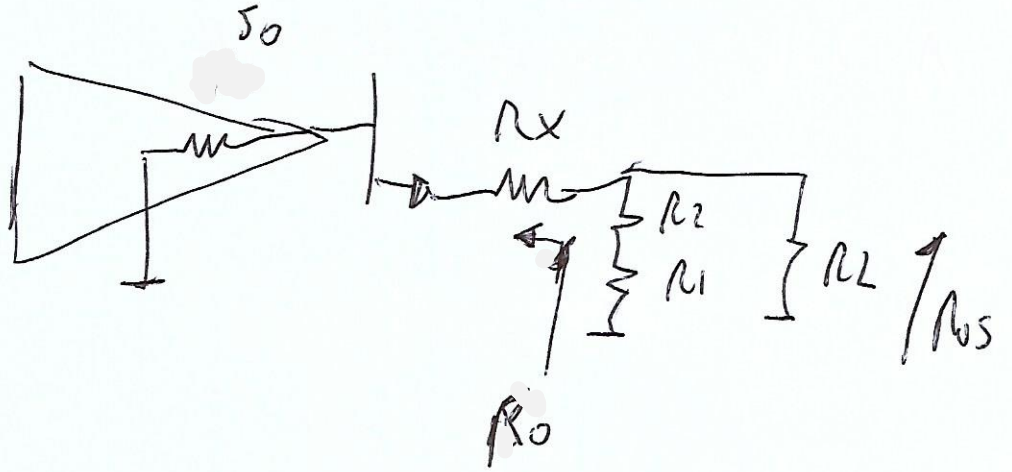
A $D = 10^4$ $R_{osF} < 100\mu\Omega$

Con limitador de corriente



$$V_o = V_R\left(1+\frac{R_2}{R_1}\right)$$

R salida

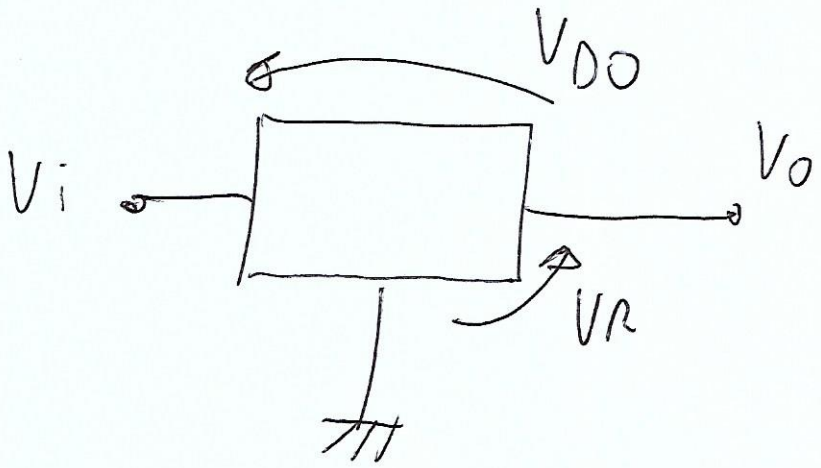


$$R_o = R_x + h_{ib} + \frac{r_o}{1+h_{fe}} \qquad 1\ R_x = 0{,}47\ \Omega$$

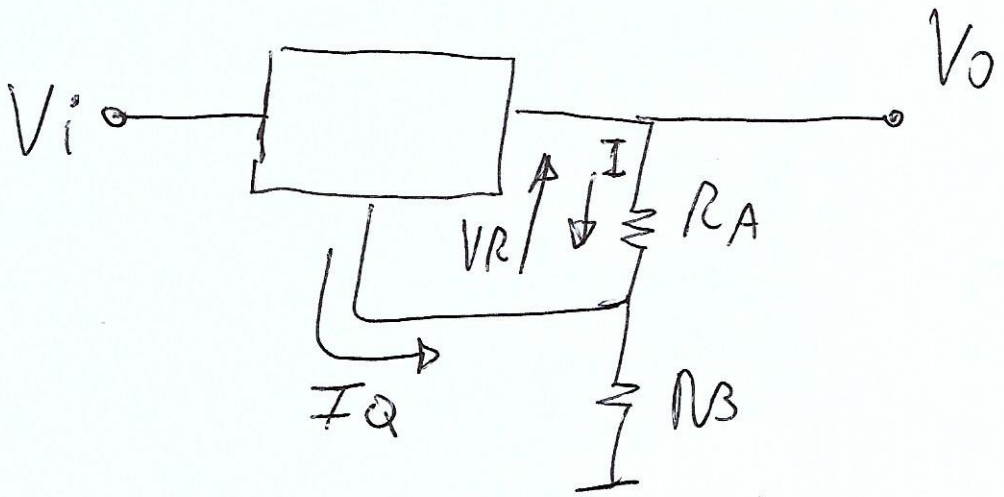
$R_o < 1{,}5\ \Omega \qquad R_{os} < 1{,}5\ \Omega \qquad 1D = 10^4$

$R_{osf} < 150\ \mu\Omega$

Regulador de tres terminales



Para obtener otro valor de Vo



$I >> I_Q \qquad I = \frac{V_R}{R_A}$

$V_O = I(R_A + R_B)$

$V_O = \frac{V_R}{R_A}(R_A + R_B) \qquad V_O = V_R\left(1 + \frac{R_B}{R_A}\right)$

I_Q en fijos I_{adj} en variables