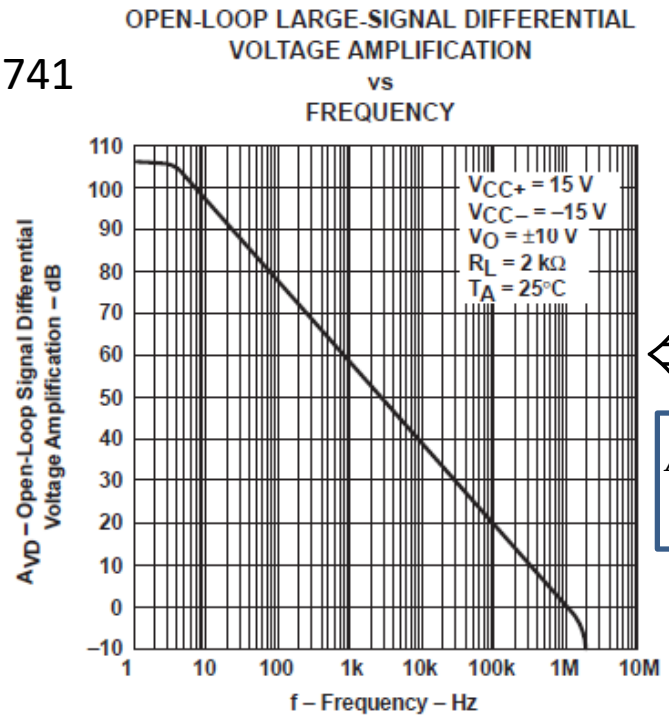
Producto GxBW

SIN REALIMENTAR

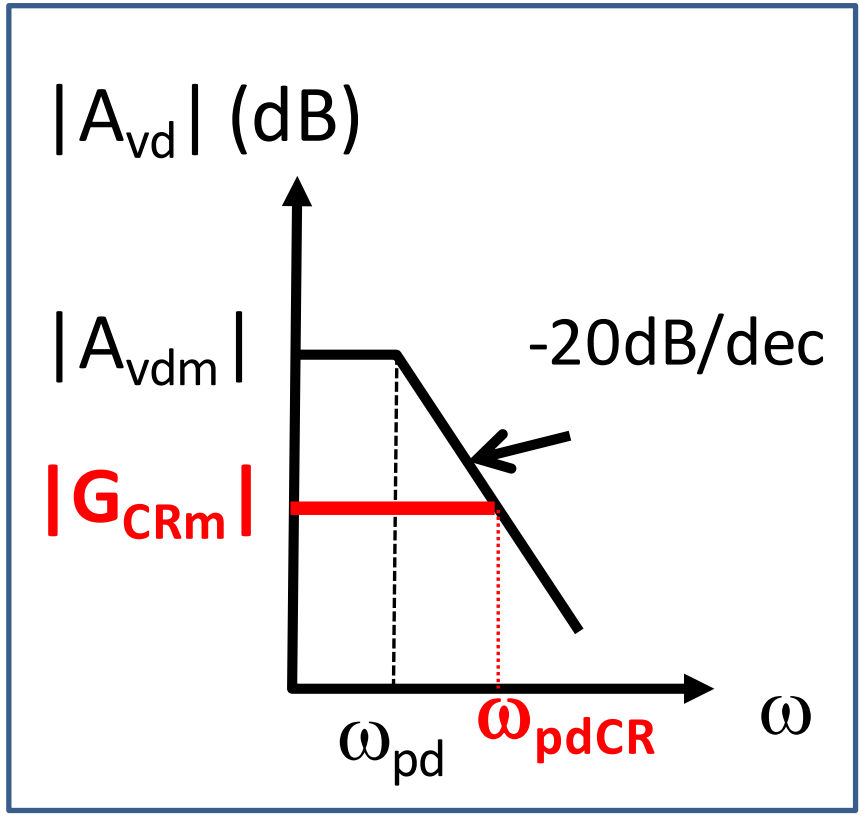
GxBW = cte= 1MHz (741)

Ej: 741



⇔ Sistema de primer orden (1 solo polo)

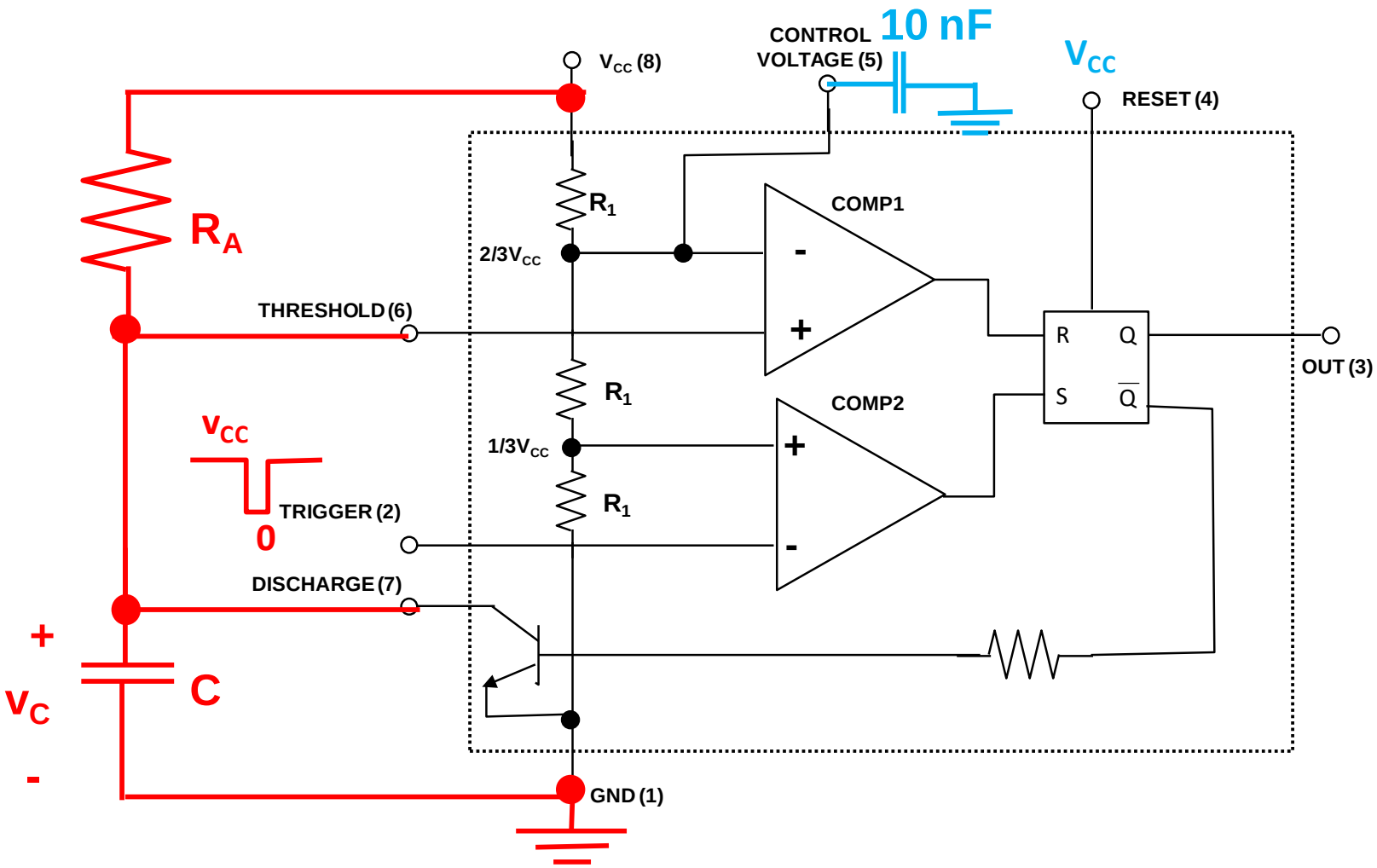
$$A(j\omega) = \frac{A_{vdm}}{1 + j\,\omega/\omega_{pd}}$$



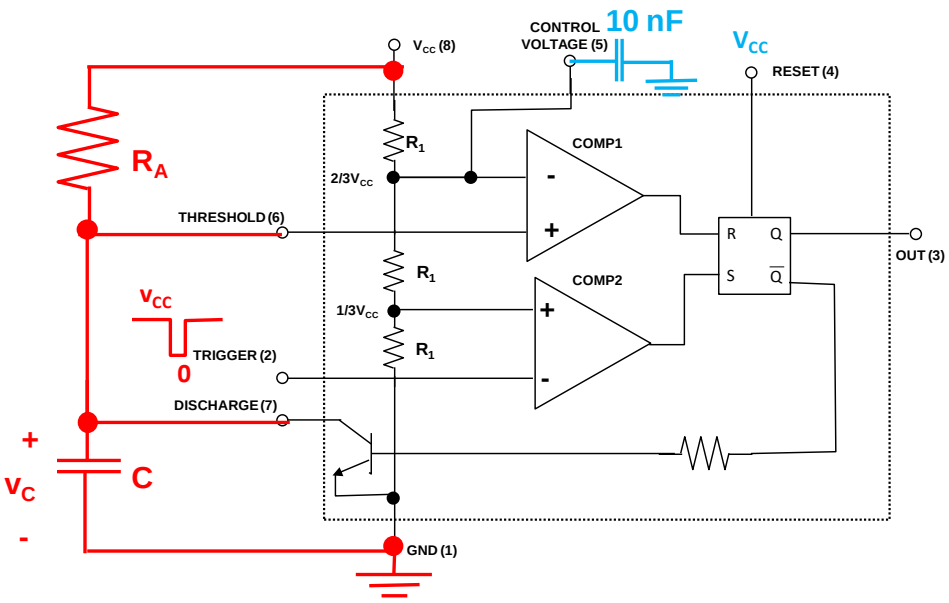
CON REALIMENTACIÓN NEGATIVA

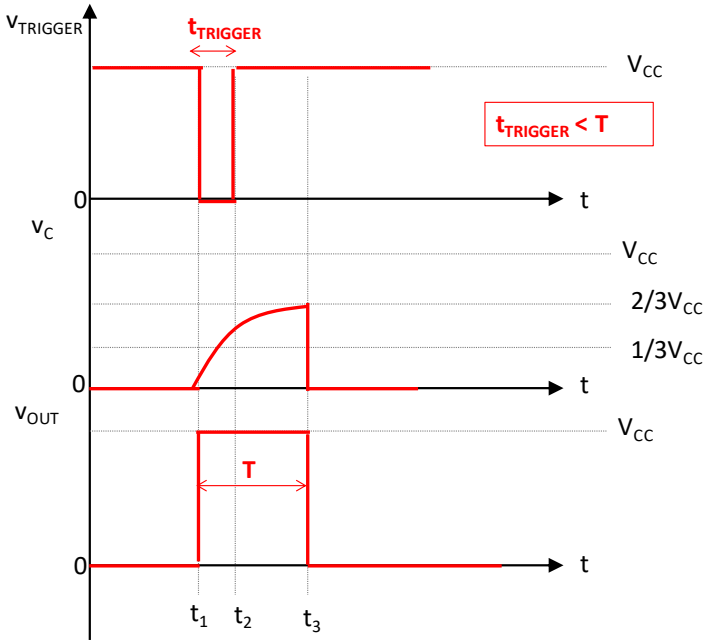
$$G_{CR}(j\omega) = \frac{A}{1 + A\beta} = \frac{\dfrac{A_{vdm}}{1 + j\,\omega/\omega_{pd}}}{1 + \left(\dfrac{A_{vdm}}{1 + j\,\omega/\omega_{pd}}\right)\cdot\beta} = \frac{\overbrace{A_{vdm}/(1 + A_{vdm}\cdot\beta)}^{G_{CRm}}}{1 + j\,\omega/\underbrace{\omega_{pd}\cdot(1 + A_{vdm}\cdot\beta)}_{\omega_{pdCR}}}$$

Modo monoestable



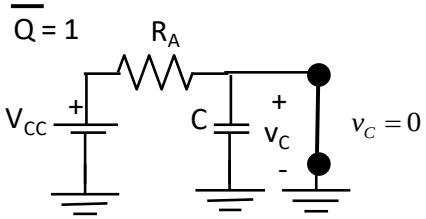
Modo monoestable

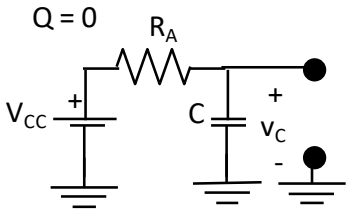




$v_C(0) = 0; V_{out}(0) = 0$

	COMP1			COMP2					
t	V_+	V_-	R	V_+	V_-	S	V_{OUT}	$\overline{Q}$	v_C
$[0\text{-}t_1)$	0	$2/3V_{CC}$	0	$1/3V_{CC}$	V_{CC}	0	0	1	0
t_1	0	$2/3V_{CC}$	0	$1/3V_{CC}$	0	1	1	0	$v_C(t)$
$(t_1\text{-}t_2)$	$v_C(t)$	$2/3V_{CC}$	0	$1/3V_{CC}$	0	1	1	0	$v_C(t)$
$[t_2\text{-}t_3)$	$v_C(t)$	$2/3V_{CC}$	0	$1/3V_{CC}$	V_{CC}	0	1	0	$v_C(t)$
t_3	$\uparrow 2/3V_{CC}$	$2/3V_{CC}$	1	$1/3V_{CC}$	V_{CC}	0	0	1	0
$>t_3$	0	$2/3V_{CC}$	0	$1/3V_{CC}$	V_{CC}	0	0	1	0

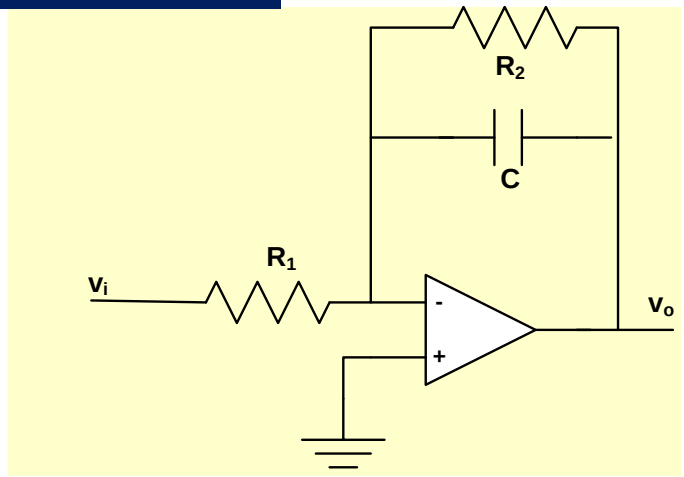




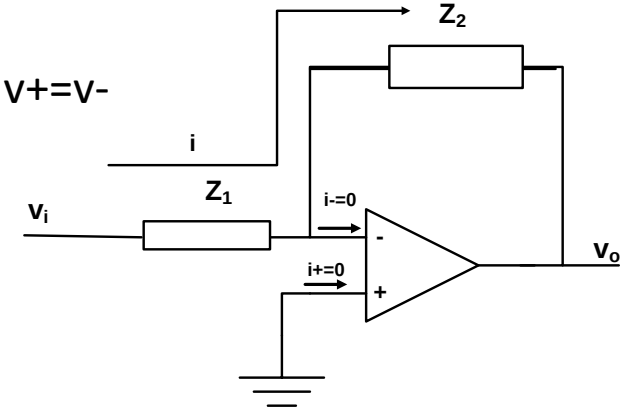
$$v_C(t) = v_{C(t\to\infty)} + \left(v_{C(t=0)} - v_{C(t\to\infty)}\right) e^{-\frac{t}{\tau}}$$

REAL

Integrador

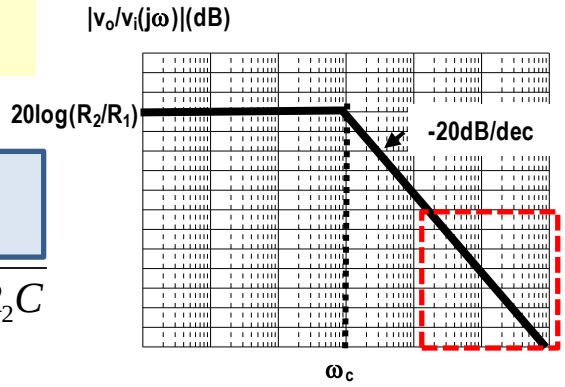


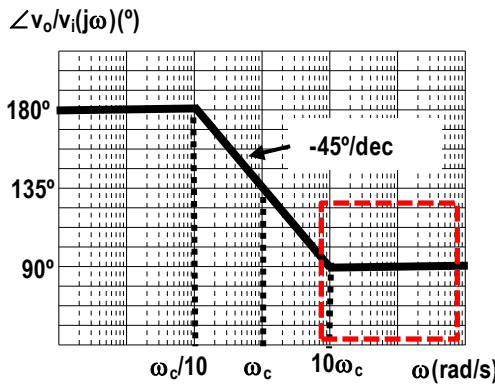
- Cortocircuito virtual:v+=v-
- $i(Z_1)=i(Z_2)=i$



$$\frac{V_o}{V_i}(j\omega) = -\frac{Z_2}{Z_1} = -\frac{\dfrac{R_2}{1+j\omega R_2 C}}{R_1} = \frac{-\dfrac{R_2}{R_1}}{1+j\omega R_2 C}$$

Polo: $\omega_c = \dfrac{1}{R_2 C}$

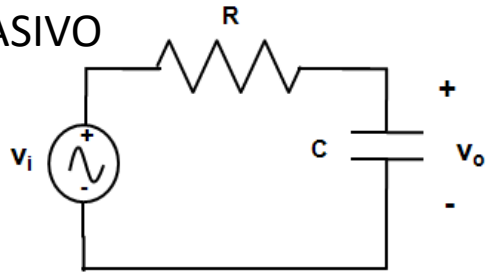




Integra si $\omega >> 1/R_2C$

$$\left.\frac{v_o}{v_i}\right|_{BF} \rightarrow -\frac{R_1}{R_2}$$

PASIVO



$$\frac{V_o}{V_i}(j\omega) = \frac{1}{1+j\omega RC}$$

Datos PLL:

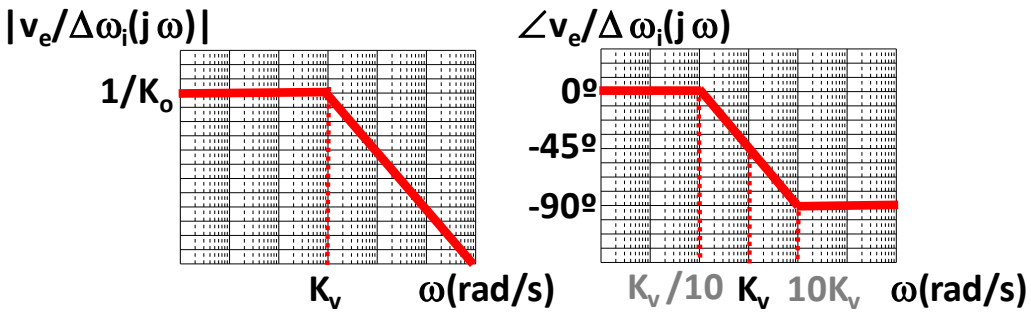
F(s) = 1; Ganancia de lazo del PLL: $K_V = K_d \cdot A_V \cdot K_O = 500\ s^{-1}$; Margen de enganche PLL: $\Delta f_L = \pm 125Hz$
Ganancia del VCO: $K_o = 2\pi \cdot krad/s.V$; Frecuencia de oscilación libre del VCO: $\omega_{fr} = 2\pi \cdot 500\ rad/s$

$$v_i(t) = sen(\omega_i \cdot t) = sen\{\omega_p \cdot [1 + m \cdot x_m(t)] \cdot t\} = sen\{2\pi \cdot 500 \cdot [1 + 0.1 \cdot sen(2\pi \cdot 5 \cdot t)] \cdot t\} : Señal \quad FM$$

$$\Rightarrow \omega_i(t) = 2\pi \cdot 500 + 2\pi \cdot 50 \cdot sen(2\pi \cdot 5 \cdot t) \rightarrow \begin{cases} f_{imáx} = 550Hz \\ f_{imín} = 450Hz \end{cases}$$

Respuesta en frecuencia ($\Delta\omega_i$ sinusoidal)

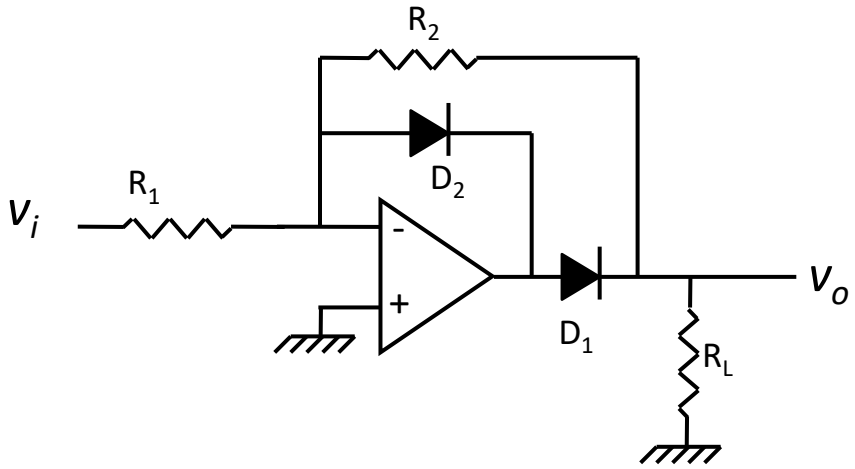
$$\frac{v_e}{\Delta\omega_i}(s) = \frac{K_V / K_o}{s + K_V}$$

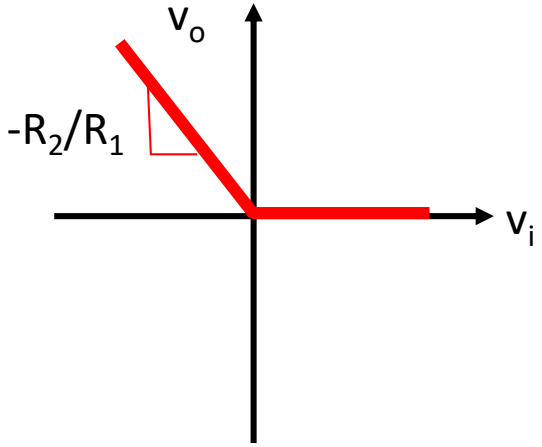


- Margen de enganche PLL: **$\Delta f_L = \pm 125Hz$**

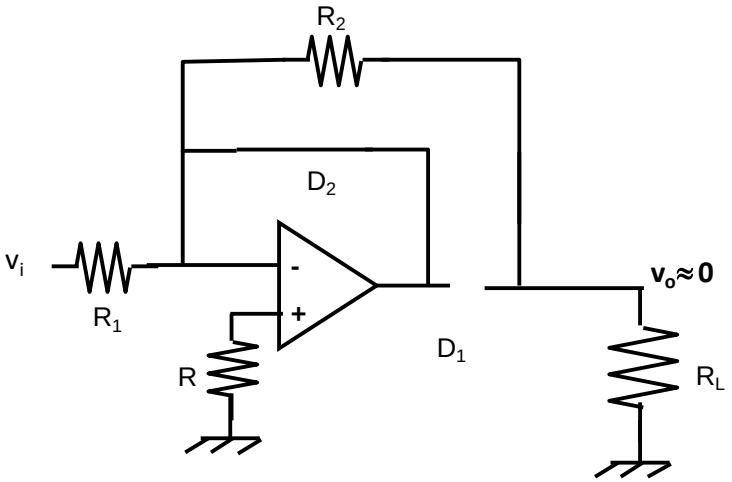
$$f_{iLmáx} = f_{fr} + \Delta f_L = 500Hz + 125Hz = 625Hz > f_{imáx}$$
$$f_{iLmín} = f_{fr} - \Delta f_L = 500Hz - 125Hz = 375Hz < f_{imín}$$

Rectificadores de precisión





$$v_i > 0 \Rightarrow \begin{cases} D_2 & ON \\ D_1 & OFF \end{cases}$$



$$v_i < 0 \Rightarrow \begin{cases} D_2 & OFF \\ D_1 & ON \end{cases}$$