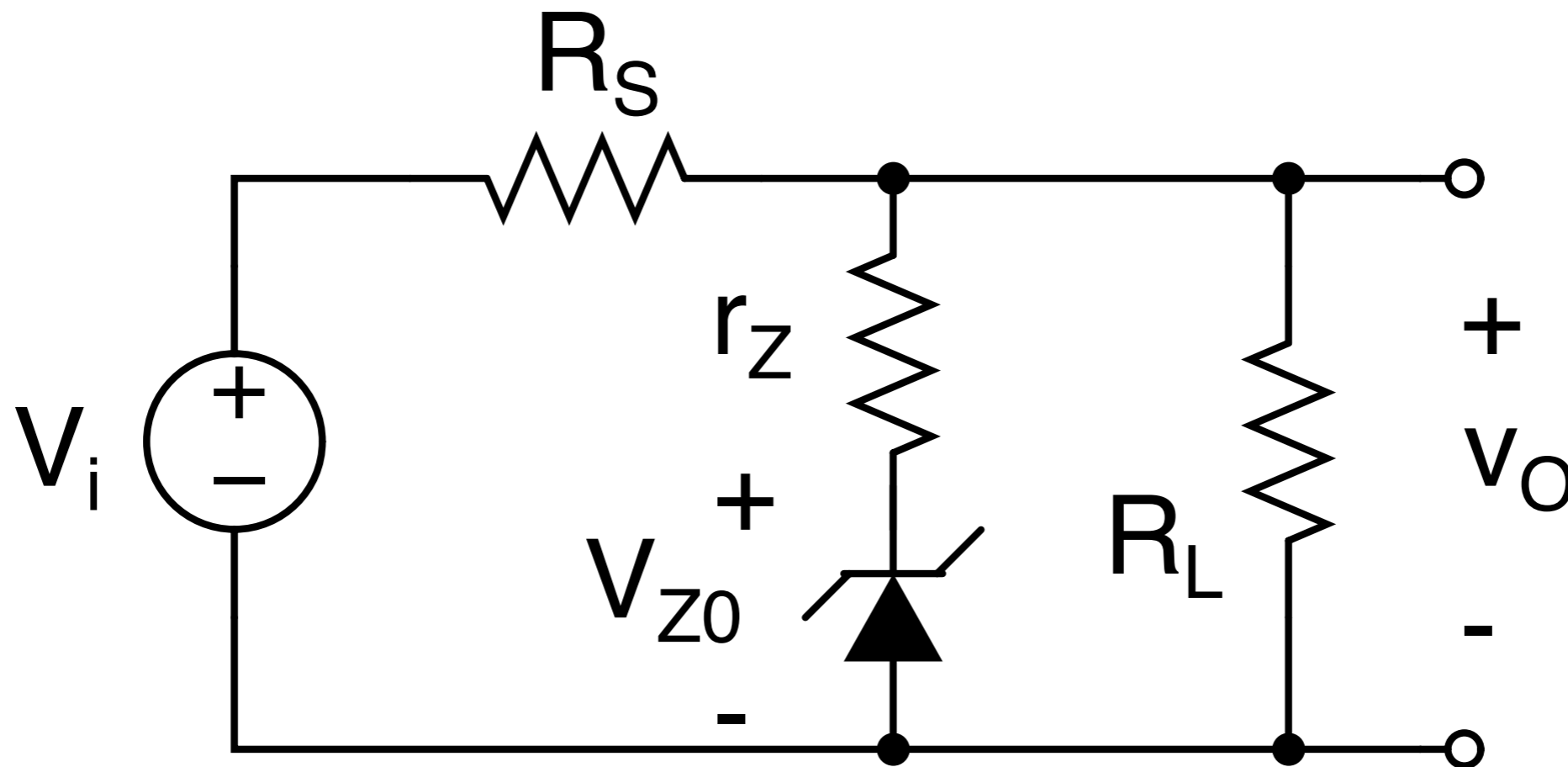
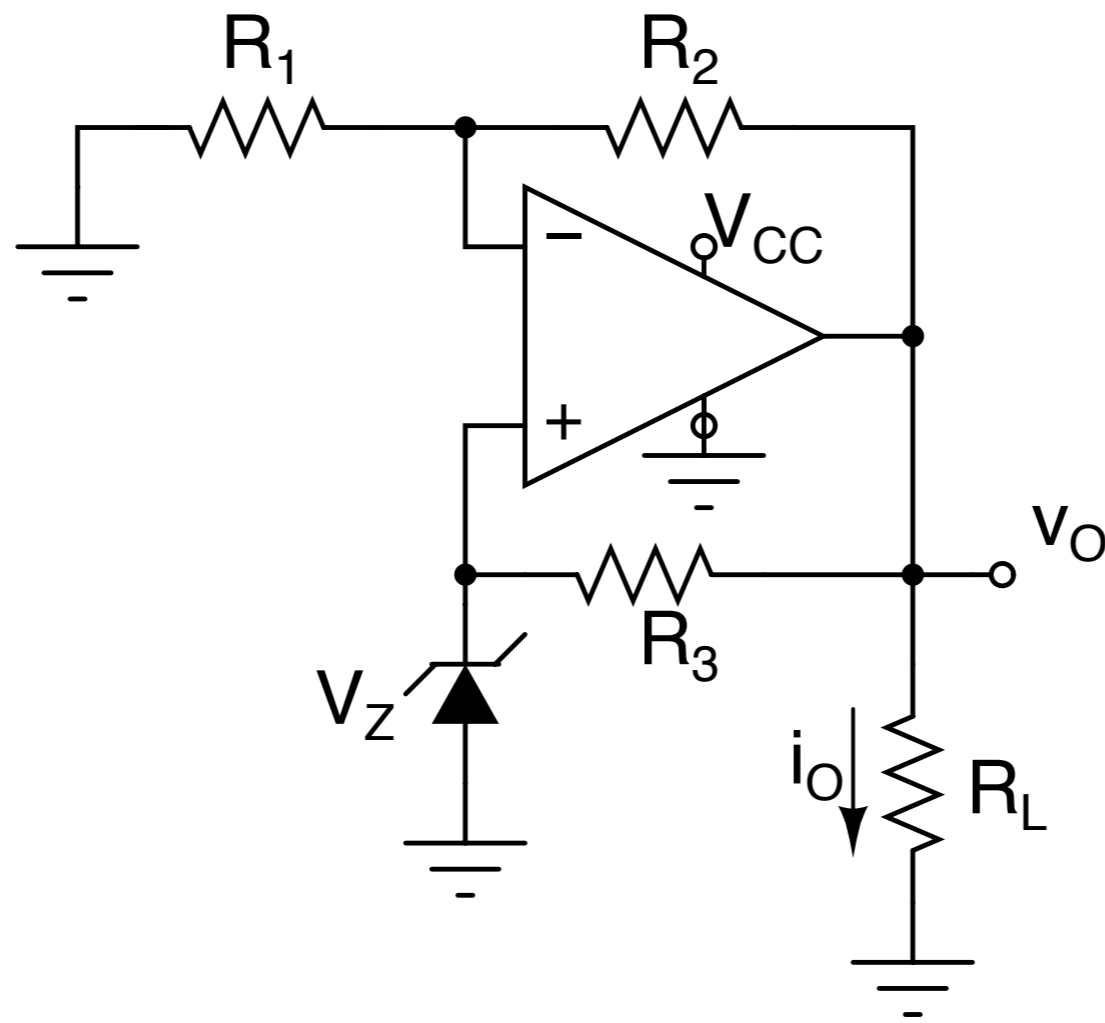


# Referencias de Voltaje

INEL 5207 - Abril 2009

- regulación de Línea =  $\frac{\Delta v_O}{\Delta V_I}$  ( $mV/V$ )
- regulación de Carga =  $\frac{\Delta v_O}{\Delta I_O}$  ( $mV/A$ )
- Coeficiente térmico =  $\frac{\Delta v_O}{\Delta T}$  ( $mV/^\circ C$ )

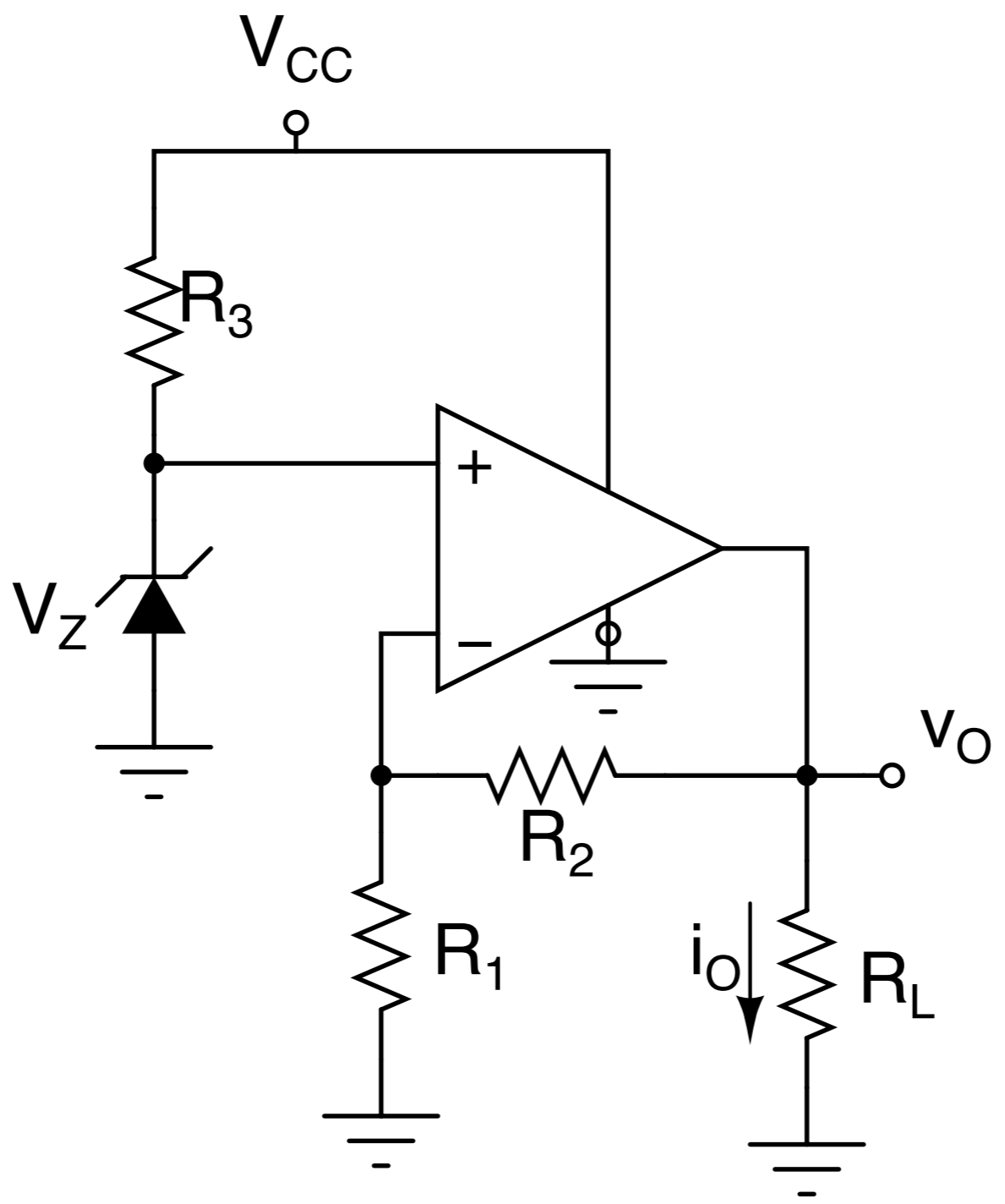


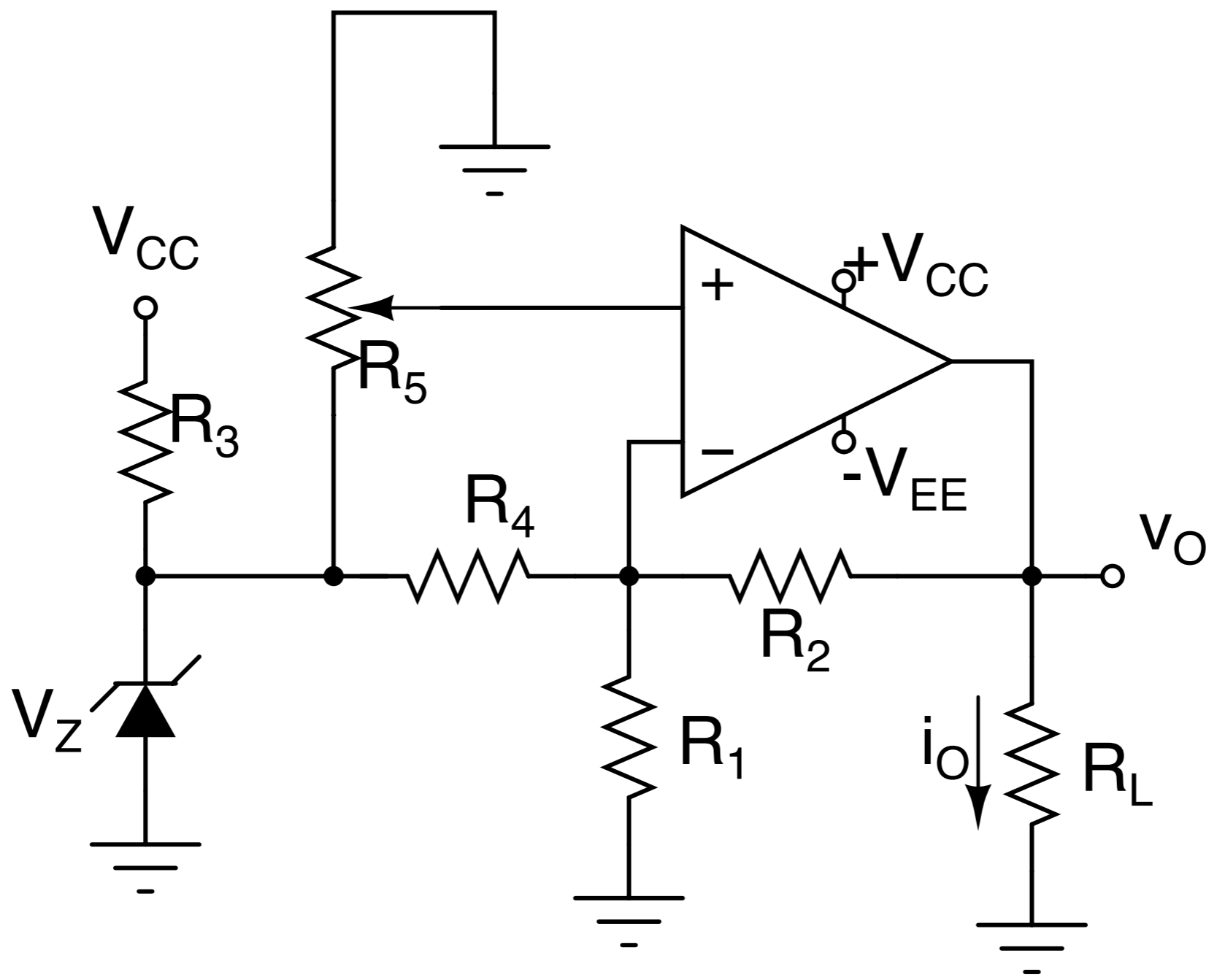


Regulación de Línea:

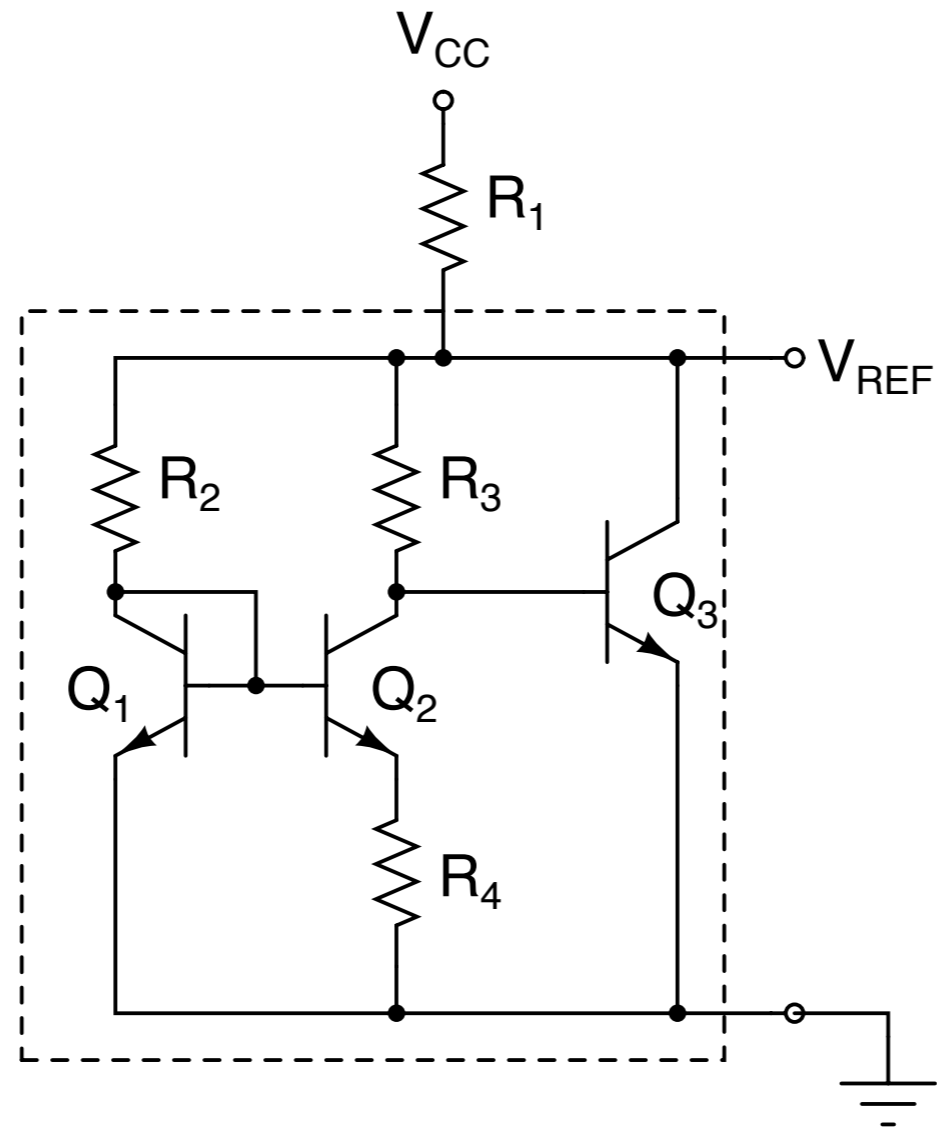
$$\left(1 + \frac{R_2}{R_1}\right) \times \left(\frac{1}{PSRR} + \frac{1}{2} \frac{1}{CMRR}\right)$$

Regulación de Carga:  $-\frac{r_o}{1 + \beta a}$



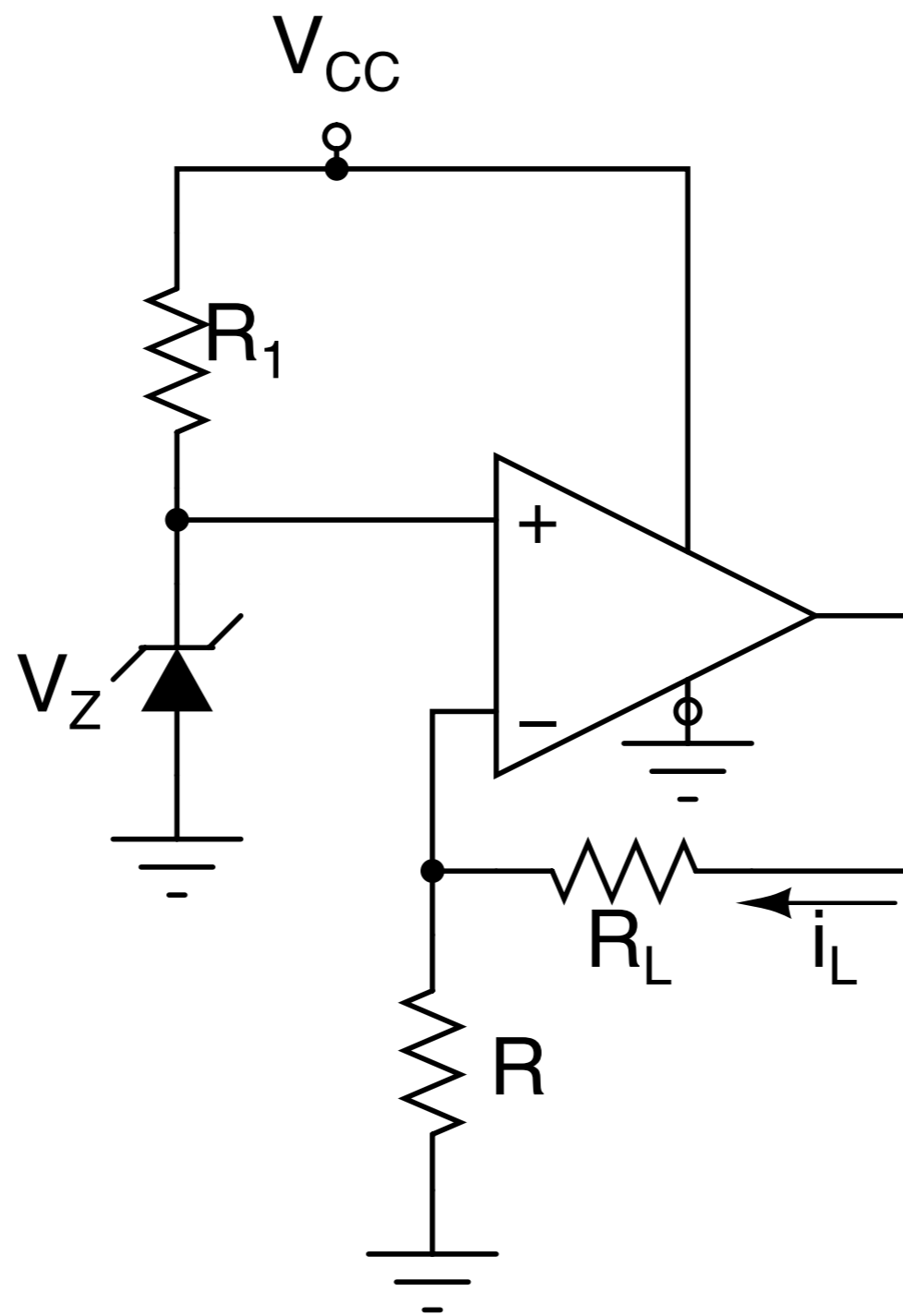


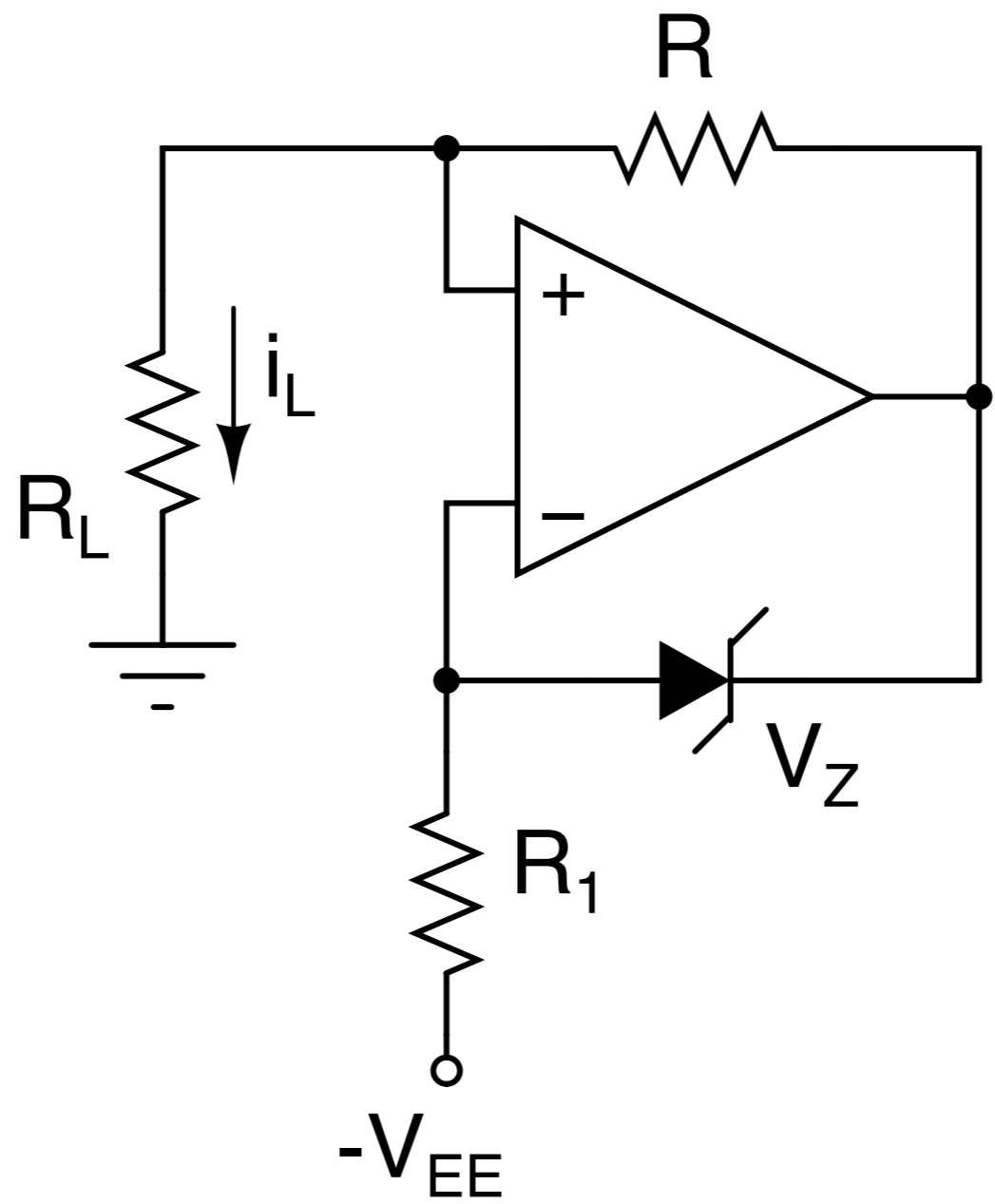
# Bandgap voltage reference

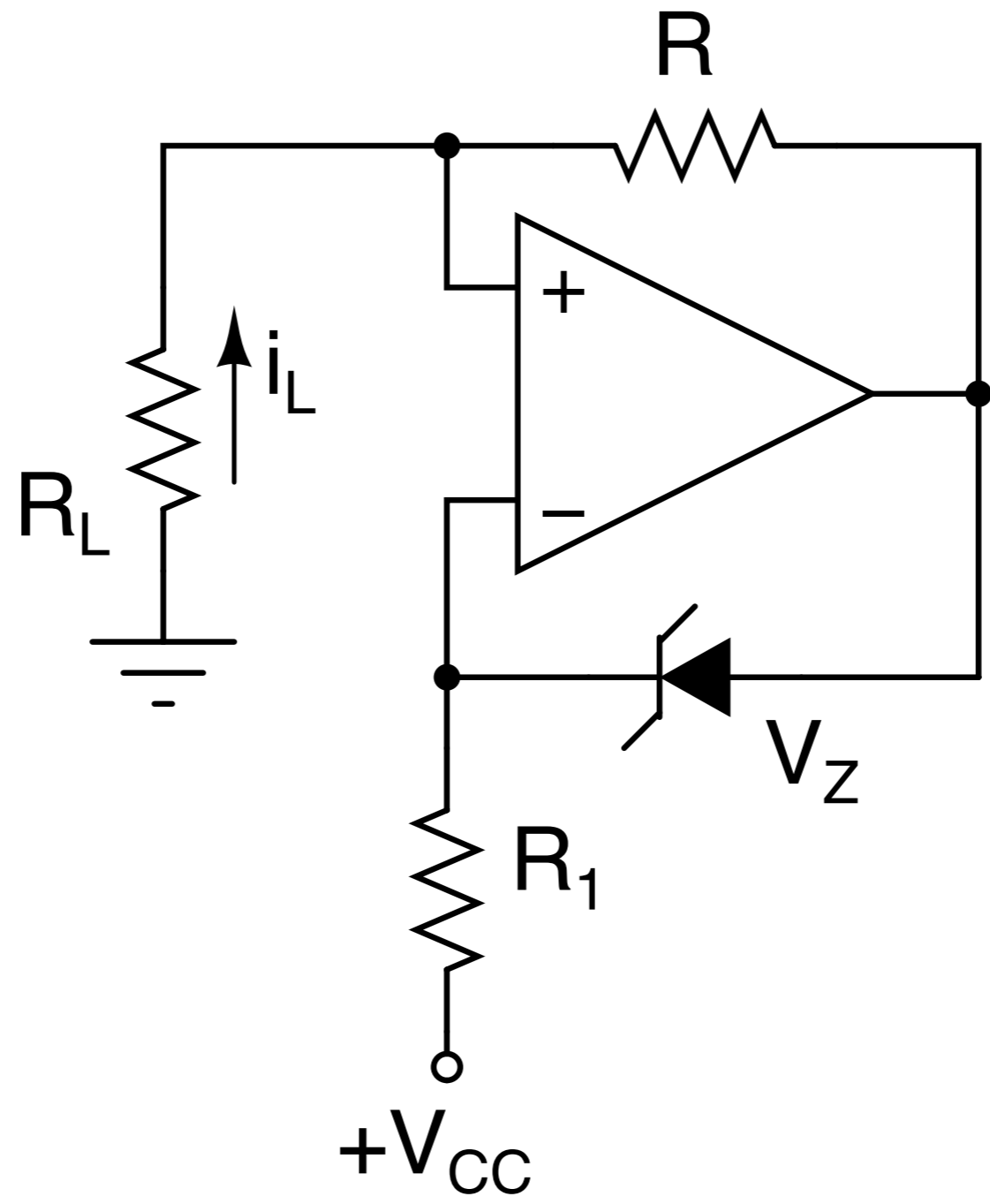


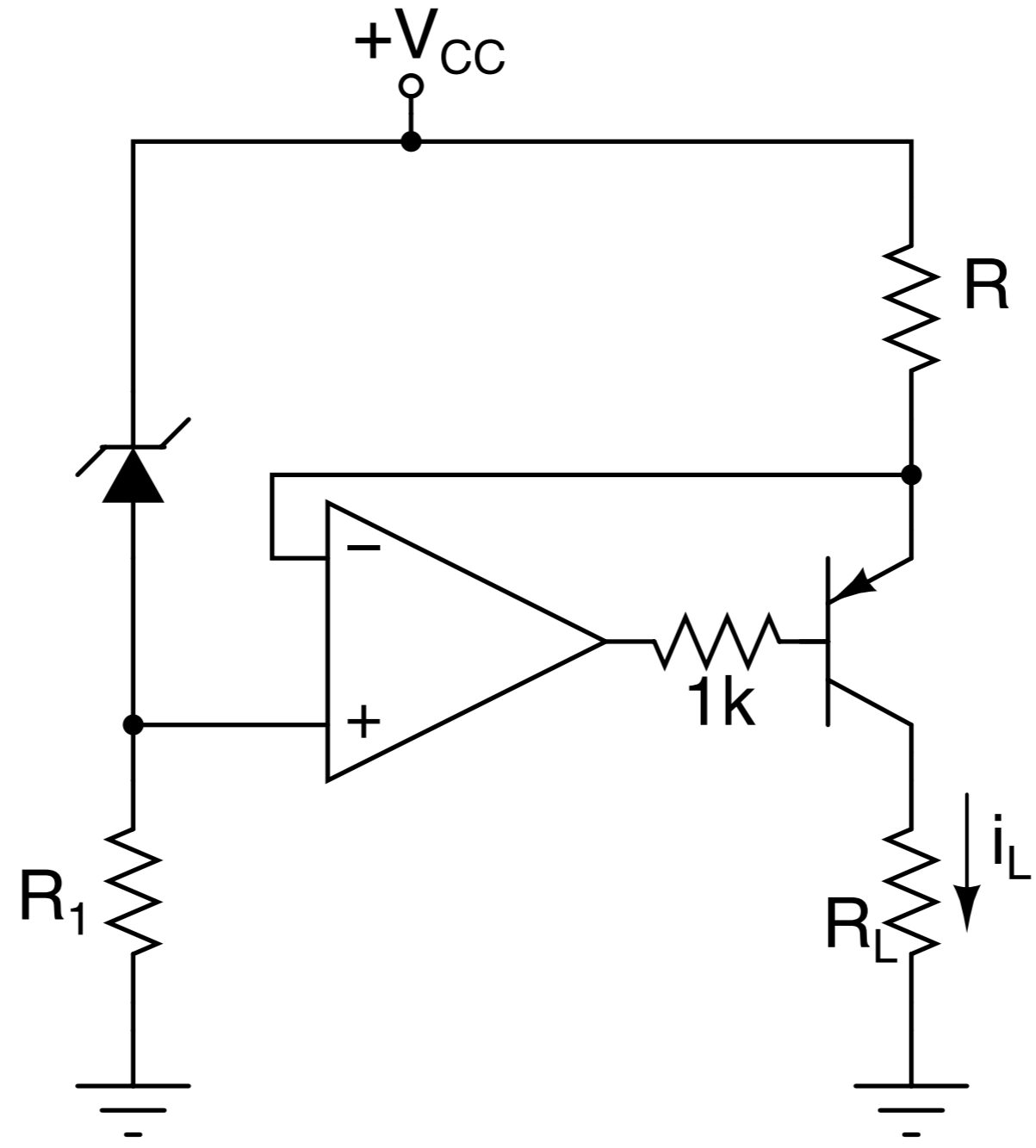
$$V_{REF} = v_{BE,3} + (v_{BE,1} - v_{BE,2}) \frac{R_3}{R_4}$$

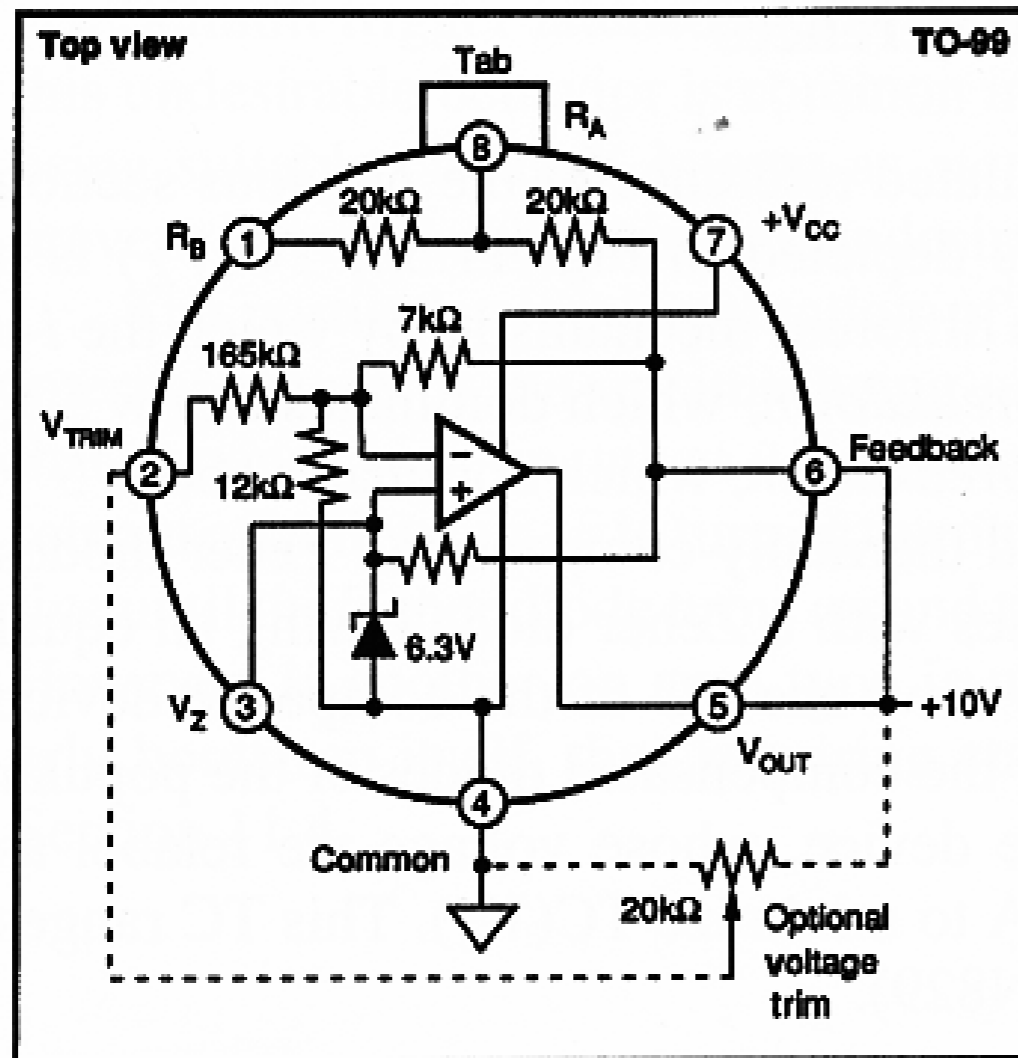
# Fuentes de corriente



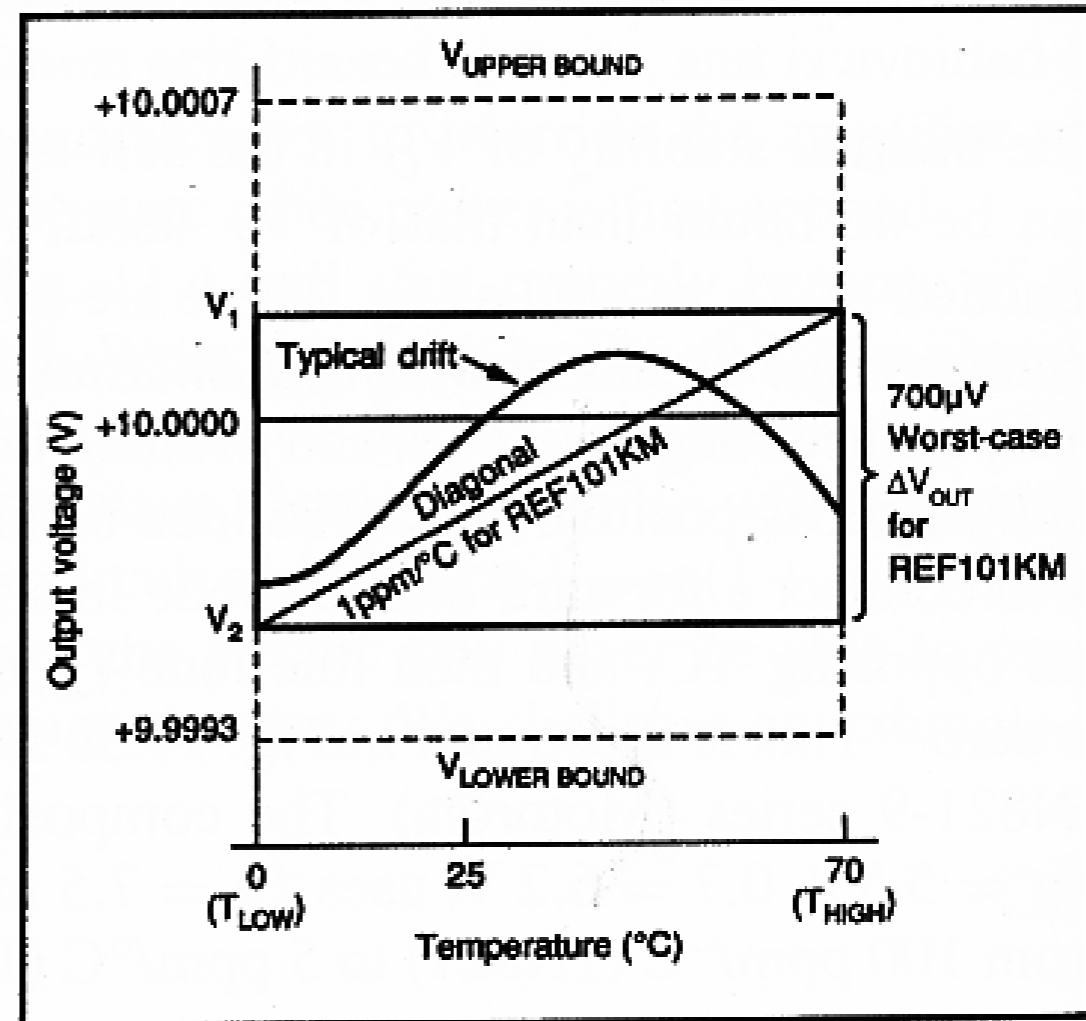








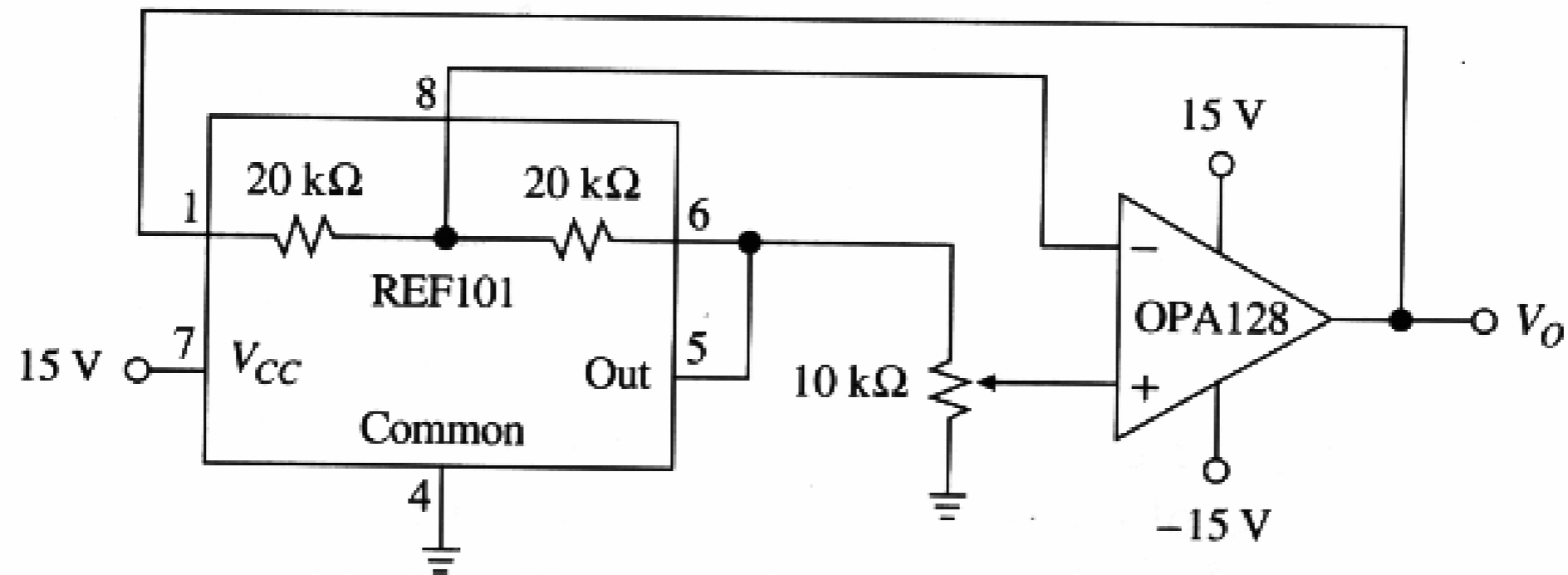
(a)



(b)

**FIGURE 11.6**

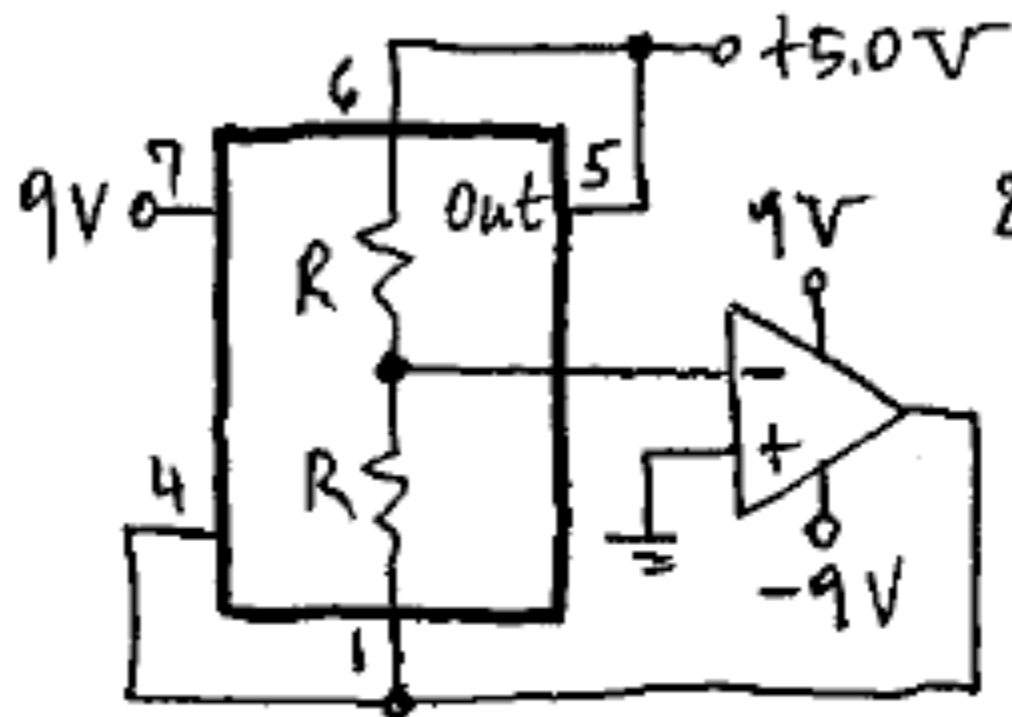
The REF101 10-V voltage reference and its drift characteristic. (Courtesy of Burr-Brown.)



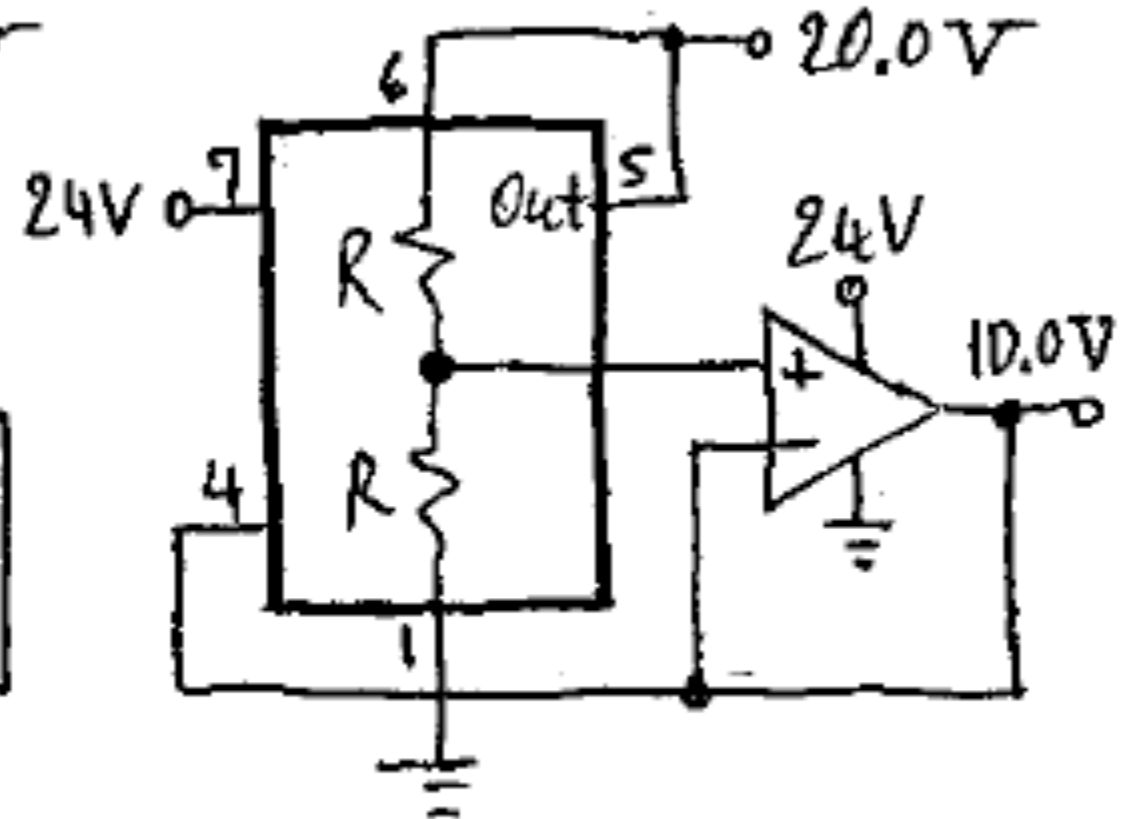
**FIGURE 11.13**

Variable reference over the range  $-10 \text{ V} \leq V_O \leq 10 \text{ V}$ .

**Prob. 11.7**



(c)



(d)

Prob. 11.7