

Problem 2.81 For the circuit of Problem 2.80, generate a bounce diagram for the current and plot its time history at the middle of the line.

Solution: Using the values for Γ_g and Γ_L calculated in Problem 2.80, we reverse their signs when using them to construct a bounce diagram for the current.

$$I_1^+ = \frac{V_1^+}{Z_0} = \frac{150}{75} = 2 \text{ A},$$

$$I_2^+ = \frac{V_2^+}{Z_0} = \frac{-150}{75} = -2 \text{ A},$$

$$I_\infty^+ = \frac{V_\infty}{Z_L} = 1.33 \text{ A}.$$

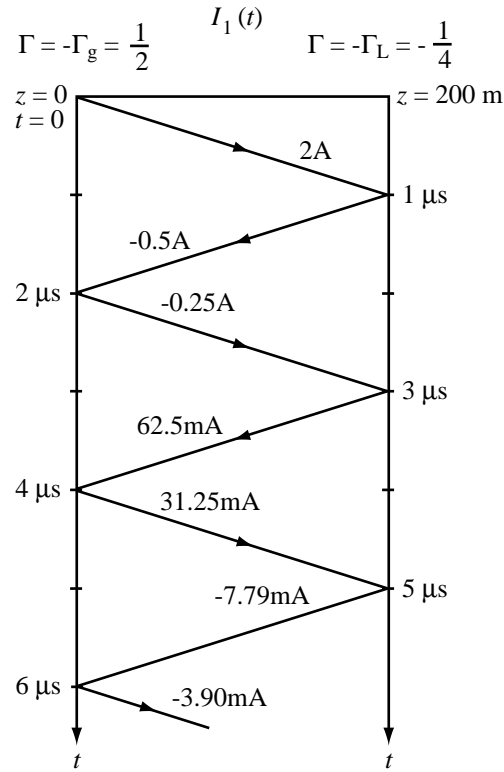


Figure P2.81: (a) Bounce diagram for $I_1(t)$ in reaction to $V_{g1}(t)$.

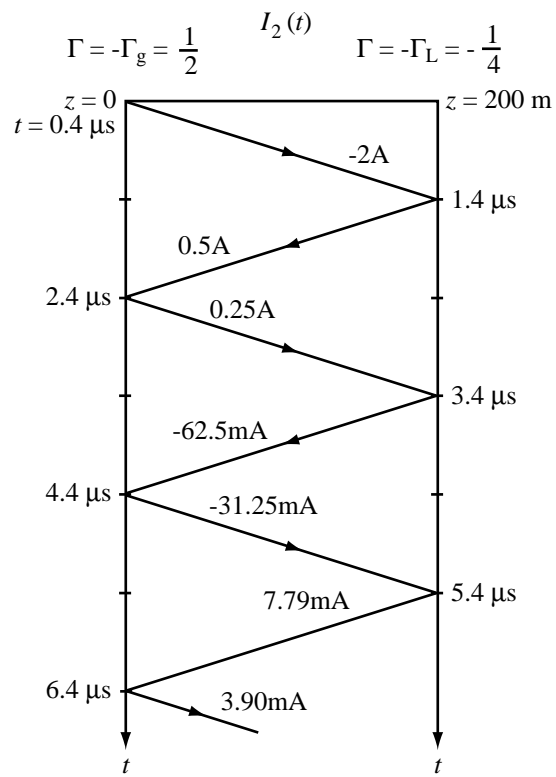


Figure P2.81: (b) Bounce diagram for current $I_2(t)$ in reaction to $V_{g_2}(t)$.

(i) $I_1(l/2, t)$ due to $V_{g1}(t)$:

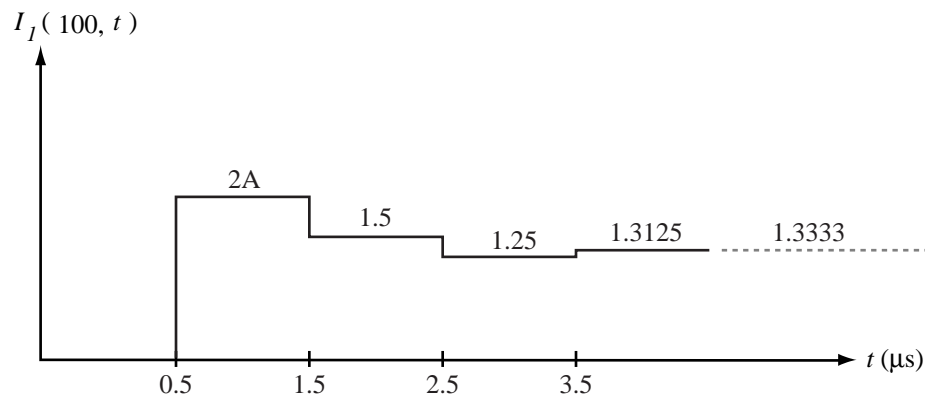


Figure P2.81: (c) $I_1(l/2, t)$.

(ii) $I_2(l/2, t)$ due to $V_{g2}(t)$:

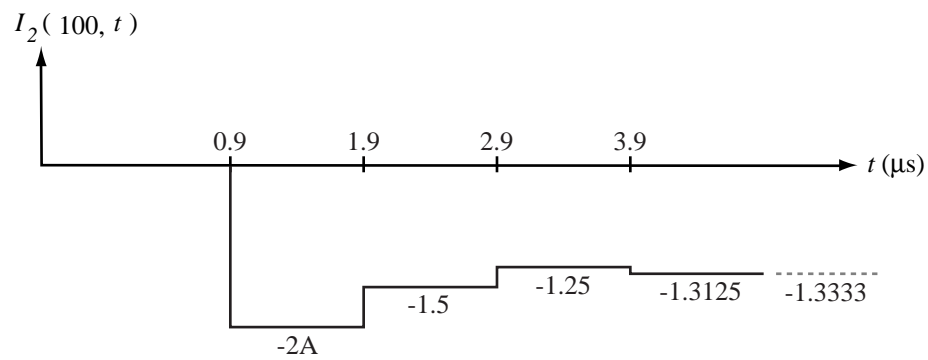


Figure P2.81: (d) $I_2(l/2, t)$.

(iii) Net current $I(l/2, t) = I_1(l/2, t) + I_2(l/2, t)$:

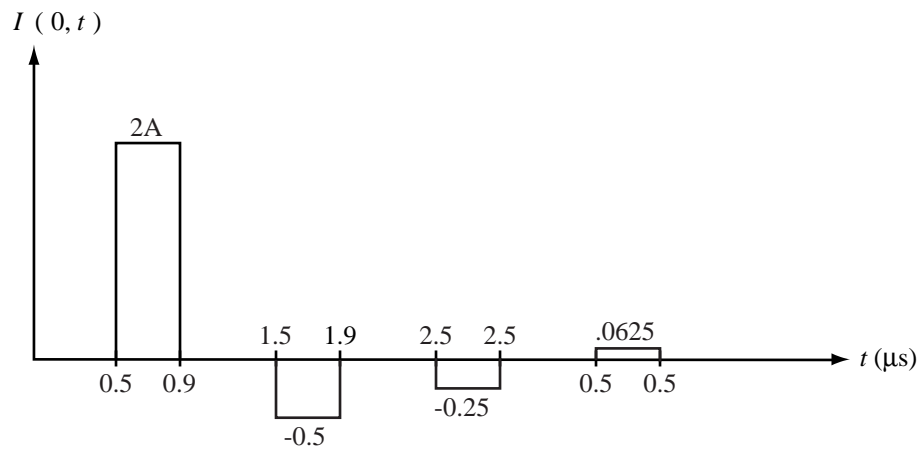


Figure P2.81: (e) Total $I(l/2, t)$.
