

95. Before the fuse blows, the current through the resistor remains zero. We apply the loop theorem to the battery-fuse-inductor loop: $\mathcal{E} - L di/dt = 0$. So $i = \mathcal{E}t/L$. As the fuse blows at $t = t_0$, $i = i_0 = 3.0 \text{ A}$. Thus,

$$t_0 = \frac{i_0 L}{\mathcal{E}} = \frac{(3.0 \text{ A})(5.0 \text{ H})}{10 \text{ V}} = 1.5 \text{ s} .$$

We do not show the graph here; qualitatively, it would be similar to Fig. 31-14.