TOOL: The following equations describe the relationship between voltage and current for electrical components.

R (RESISTOR):

$$v = iR$$

L (INDUCTOR):

$$v = L\frac{di}{dt}$$

C (CAPACITOR):

$$i = C\frac{dv}{dt}$$

D (DIODE):

$$i = I_0 e^{\left(v/V_T - 1\right)} \qquad v_T = kT/q \qquad I_0 \equiv \text{saturation current}$$