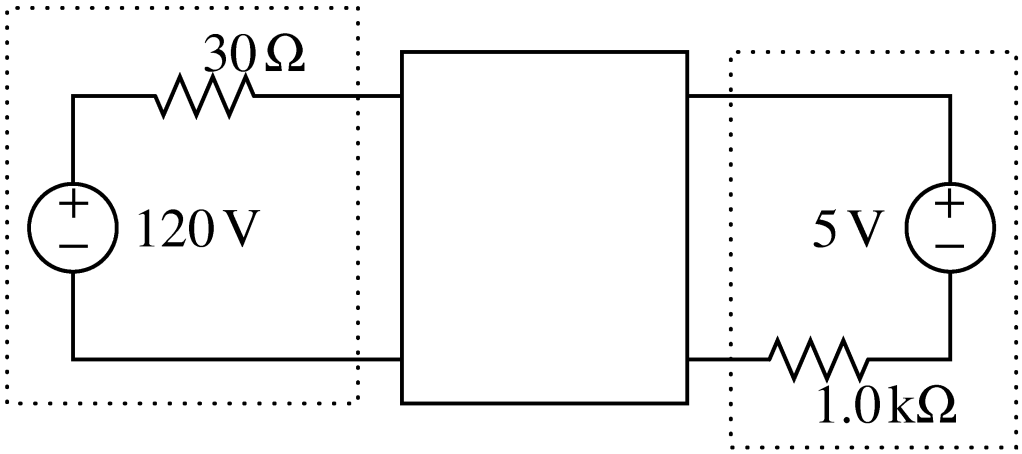

The above circuit represents a charger for a lithium ion battery. The source is wall electricity after it has been converted to DC. It has an internal resistance of 30Ω. The battery has a voltage rating of 5V and an internal resistance of 1kΩ. In order to minimize the change time, the most amount of power possible must be delivered into the 5V source only. The power delivered into its internal resistance is lost in the form of heat. Devise an interface circuit that minimizes the charge time. Hint: use P=VI to find the power through the voltage source.