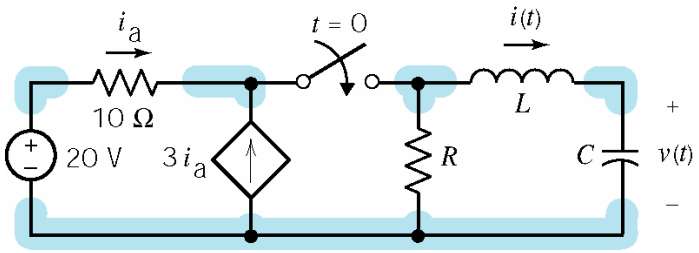
Interpreting circuit diagrams:

An **electric circuit** is an interconnection of electric **circuit elements**. (Circuit elements are also called **devices**, **components** or **branches**.)

Each circuit element has at least two **terminals**, i.e. places where that element can be connected to other circuit elements. (Terminals are sometimes called **leads**.) The parts of the circuit where terminals are connected together are called **nodes**. (Nodes are also called vertices.)

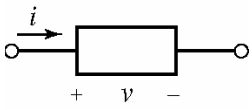


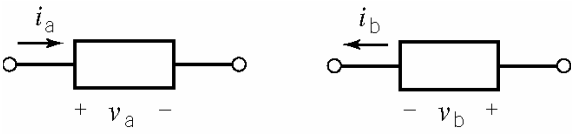
This circuit is an interconnection of two terminal elements.

The **shape** of the element indicates it behavior.
Each element is characterized by a **parameter**, represented either as a value with units or as a variable.
Each element has two terminals that are connected to nodes of the network. The element is said to be **incident** to the nodes ate which its terminals are connected.

Charge, current and voltage.

Two quantities are identified for each two terminal circuit element: the element current and the element voltage.





$$v_b = -v_a \quad \text{and} \quad i_b = -i_a$$

Current and voltage each have a direction as well as value. The direction is constrained by the circuit element so there are only two possible directions. Changing the direction corresponds to multiplying the value by –1.

Power and Energy

$$p = v\,i \text{ and } w = \int p\,dt$$