

Independent Current Sources

An independent current source is an energy source that pushes a constant flow of electrons through an electrical circuit regardless of the *load* presented to it. In other words, a 1 amp current source will maintain a current flow of 1 amp through its terminals if it has an open circuit or short circuit as a load. The symbol for the current source and its I-V curve is shown in figure 1. The current source symbol must be identified with at least its direction of current flow marked and a value or variable for its current.

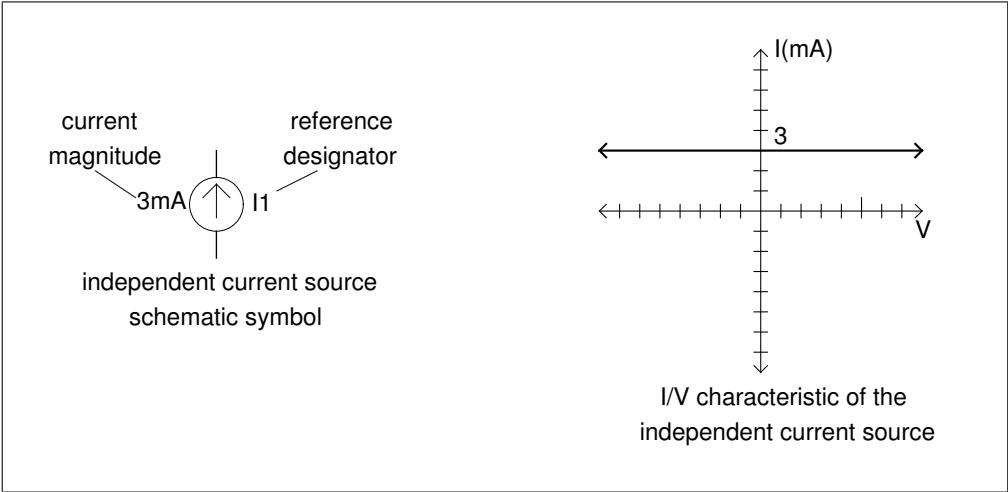


Figure 1: Independent current source and I-V characteristics

Another way to think of a current source is of a constant speed motor driving a water pump. The constant speed motor will always deliver a constant volume of water per unit time through the pump. This is analogous to a constant flow of electrons per unit time.

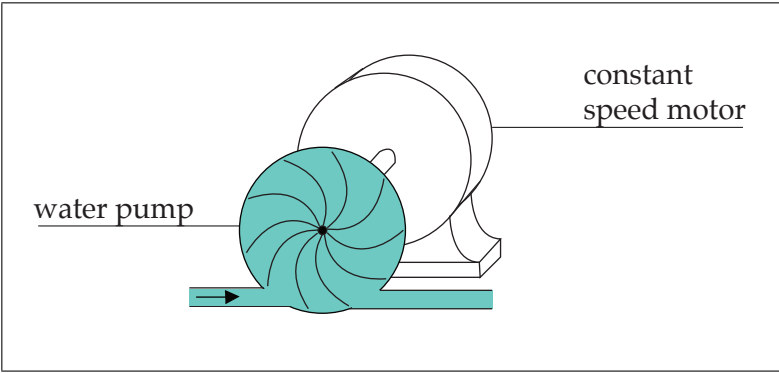


Figure 2: Current source water analogy