《工程电路分析》

图书基本信息

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内容概要

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书籍目录

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章节摘录

Voltage We must now begin to refer to a circuit element, something best defined in general terms to begin with.Such electrical devices as fuses, light bulbs, re-sistors, batteries, capacitors, generators, and spark coils can be represented by combinations of simple circuit elements.We begin by showing a very general circuit element as a shapeless object possessing two terminals at which connections to other elements may be made （Fig.2.8）.There are two paths by which current may enter or leave the element.In subsequent discussions we will define particular circuit elements by describ-ing the electrical characteristics that may be observed at their terminals.In Fig.2.8, let us suppose that a dc current is sent into terminal A,through the general element, and back out of terminal B.Let us also assume that pushing charge through the element requires an expenditure of energy.We then say that an electrical voltage （or a potential difference） exists be-tween the two terminals, or that there is a voltage "across" the element.Thus, the voltage across a terminal pair is a measure of the work required to move charge through the element.The unit of voltage is the volt,2 and 1 volt is the same as 1 J/C.Voltage is represented by V or v.A voltage can exist between a pair of electrical terminals whether a current is flowing or not.An automobile battery, for example, has a voltage of 12 V across its terminals even if nothing whatsoever is connected to the terminals.According to the principle of conservation of energy, the energy that is expended in forcing charge through the element must appear somewhere else.When we later meet specific circuit elements, we will note whether that energy is stored in some form that is readily available as electric energy or whether it changes irreversibly into heat, acoustic energy, or some other nonelectrical form.We must now establish a convention by which we can distinguish be-tween energy supplied to an element and energy that is supplied by the element itself.We do this by our choice of sign for the voltage of terminalA with respect to terminal B.If a positive current is entering terminal A of the element and an external source must expend energy to establish this cur-rent, then terminal A is positive with respect to terminal B.（Alternatively,we may say that terminal B is negative with respect to terminal A.）

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精彩短评

1、很注重基础的一本书，看原版也能很好地锻炼英语阅读能力。
2、非常不错的书！不过有一点我不明白为什么有两章没有纸质版的只有电子版？难道就为了省那么一点钱？

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