

<<电子信息专业英语>>

图书基本信息

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## <<电子信息专业英语>>

### 前言

近年来,随着科学技术的迅猛发展,高等教育的教学思想和教学模式也在不断地发展,这就要求高等院校教材进行相应的调整,重新定位,以适应新的社会发展需求,培养新一代实用综合型人才。

电子信息是当今国内外发展最迅速、技术更新最快的工程领域之一,电子信息专业英语对学习电子信息新知识和新技术起着非常重要的作用。

《电子信息专业英语》是一本突出高等教育实用特点的电子信息专业英语教材,内容涉及电工电子基础、仪器仪表使用、传感器技术、通信技术等方面,基本覆盖了现代电子信息的各个领域,同时收录了一些电子信息新技术领域发展前沿方面的文章(如太阳能、电子纸、蓝牙技术和3G等)。课文内容丰富,题材广泛,通俗易懂,选择的文章实用性强并尽量保证学生能利用已有专业知识理解课文内容。

每课课后有词汇、注释、练习及阅读等。

在《电子信息专业英语》书后附有课文参考译文及部分练习参考答案,供读者参考对照。

另外,书后还附有电子专业词汇和科技英语阅读与翻译技巧相关知识,供相关专业读者参考。

《电子信息专业英语》由王菲、施亚齐担任主编,并编写了第四、第五篇,董小琼编写了第一篇,王俊清编写了第二篇,邹淑云编写了第三篇。

由于编者水平有限,时间仓促,书中难免有纰漏和不足之处,请尊敬的教师、同学和广大学者批评指正。

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### 内容概要

本书由电路基础篇、仪表使用篇、传感器篇、通信系统篇和新技术篇组成。

电路基础篇内容包括电阻电容电感、二极管及其电路、三极管及其电路、逻辑门、集成电路和运算放大器；仪表使用篇内容包括万用表、示波器、信号发生器和直流电源；传感器篇内容包括电路元件和参数、电压/频率转换器、光学传感器、传感器认证插入测量和感温火灾探测器；通信系统篇内容包括时分复用、频分复用、脉冲编码调制、光纤通信和移动通信；新技术篇内容包括太阳能、电子纸、蓝牙技术和3G。

本书可作为高等院校电子信息专业的专业英语教材，也可供从事相关专业的工程技术人员参考使用。

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## 章节摘录

In order to improve the power device performance it is advantageous to have the low on-state resistance of power BJTs with an insulated gate input similar to that of a power MOSFET. The Darlington configuration of the two devices has superior characteristics as compared to the discrete devices. This hybrid device could be gated in the same way as a power MOSFET with low on-state resistance because most of the output current is handled by the BJT. Because of the low current gain of BJT, a MOSFET of equal size is required as a driver. A more powerful approach to obtain the maximum benefits of the MOS gate control and bipolar current conduction is to integrate the physics of MOSFET and BJT within the same semiconductor region. This concept gave rise to the commercially available IGBTs with superior on-state characteristics, good switching speed and excellent safe operating area. Compared to power MOSFET the absence of the integral body diode can be considered as an advantage or disadvantage depending on the switching speed and current requirements. An external fast-recovery diode or a diode in the same package can be used for specific applications. The IGBTs are replacing MOSFET in high voltage applications with lower conduction losses. They have on-state voltage and current density comparable to a power BJT with higher switching frequency. Although they exhibit fast turn-on, their turn-off is slower than a MOSFET because of current fall time. Also, IGBTs have considerably less silicon area than similar rated power MOSFETs. Therefore, by replacing power MOSFETs with IGBTs the efficiency is improved and cost is reduced. Additionally, IGBT is known as a conductivity modulated FET (COMFET), insulated gate transistor (IGT), and bipolar mode MOSFET.

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