



Textbook
Series

Basic Electronics

Christopher Gunn

Basic Electronics

Edited by
Christopher Gunn

Basic Electronics
Edited by Christopher Gunn
ISBN: 978-1-63549-803-5 (Paperback)

© 2018 Larsen & Keller



Published by Larsen and Keller Education,
5 Penn Plaza,
19th Floor,
New York, NY 10001, USA

Cataloging-in-Publication Data

Basic electronics / edited by Christopher Gunn.
p. cm.

Includes bibliographical references and index.

ISBN 978-1-63549-803-5

1. Electronics. 2. Electrical engineering. I. Gunn, Christopher.

TK7803 .B37 2018

621.381--dc23

This book contains information obtained from authentic and highly regarded sources. All chapters are published with permission under the Creative Commons Attribution Share Alike License or equivalent. A wide variety of references are listed. Permissions and sources are indicated; for detailed attributions, please refer to the permissions page. Reasonable efforts have been made to publish reliable data and information, but the authors, editors and publisher cannot assume any responsibility for the validity of all materials or the consequences of their use.

00077574

Trademark Notice: All trademarks used herein are the property of their respective owners. The use of any trademark in this text does not vest in the author or publisher any trademark ownership rights in such trademarks, nor does the use of such trademarks imply any affiliation with or endorsement of this book by such owners.

The publisher's policy is to use permanent paper from mills that operate a sustainable forestry policy. Furthermore, the publisher ensures that the text paper and cover boards used have met acceptable environmental accreditation standards.

Printed and bound in China.

For more information regarding Larsen and Keller Education and its products, please visit the publisher's website www.larsen-keller.com

Table of Contents

Preface

VII

Chapter 1	An Overview of Electronics	1
	a. Electronics	1
	b. Diode	16
	c. p-n Diode	44
	d. p-n junction	53
	e. Applications of Diode	68
	f. Zener Diode	73
Chapter 2	Electronic Circuits: An Integrated Study	86
	a. Electronic Circuit	86
	b. Clipper (Electronics)	92
	c. Clamper (Electronics)	103
	d. Voltage Doubler	108
Chapter 3	Transistors and its Types	117
	a. Transistor	117
	b. Bipolar Junction Transistor	137
	c. Common Base Amplifier	162
	d. Common Emitter Amplifier	170
	e. Unijunction Transistor	191
Chapter 4	Understanding Field-Effect Transistor	198
	a. Field-effect Transistor	198
	b. Junction Gate Field-effect Transistor	217

Permissions

Index

Basic Electronics

Electronics deals with the science of electrons and controlling electric energy. It is mainly concerned with designing and constructing circuits by using electric machines like transistors. It includes the study of characteristics and behavior of electrons in vacuum, semiconductors, gas and conductors. Electronics has many branches namely circuit design, analog electronics, embedded systems, microelectronics, digital electronics, etc. This book elucidates the concepts and innovative models around prospective developments with respect to electronics. It is a valuable compilation of topics, ranging from the basic to the most complex theories and principles in this field. This textbook is an essential guide for both academicians and those who wish to pursue this discipline further.

Christopher Gunn pursued his Master of Engineering (Electrical and Electronic Engineering) from RMIT University, Australia. His interest areas of academic research include circuits and semiconductors. He has traveled and lectured extensively throughout Europe and United States; primarily for undergraduate education. Gunn has authored and edited a number of academic periodicals, journal papers, articles and books in the field of electronic engineering.