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Circuit Analysis

Basics Of Circuit Analysis

**This book
shows readers
how to learn
analog
electronics by
simulating
circuits.**

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Readers will be enabled to master basic electric circuit analysis, as an essential component of their professional education. The author's approach

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**enables
readers to
learn theory
as needed,
then
immediately
apply it to the
simulation of
circuits based
on that
theory, while
using the**

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**resulting
tables, graphs
and
waveforms to
gain a deeper
insight into
the theory, as
well as where
theory and
practice
diverge!
Power**

electronics systems are nonlinear variable structure systems. They involve passive components such as resistors, capacitors,

and inductors, semiconductor switches such as thyristors and MOSFETs, and circuits for control. The analysis and design of such systems presents significant

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**challenges.
Fortunately,
increased
availability of
powerful
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programs
makes the ana
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easier. PSIM®**

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simulation
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package,
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specifically for
use in power
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but can be
used to
simulate any
electronic
circuit. With
fast simulation
speed and
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PSIM provides
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**simulation
environment
to meet the
user
simulation and
development
needs. This
book shows
how to
simulate the
power
electronics**

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environment.
The
prerequisite
for this book is
a first course
on power
electronics.
This book is
composed of
eight**

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chapters:

Chapter 1 is an introduction to PSIM. Chapter 2 shows the fundamentals of circuit simulation with PSIM. Chapter 3 introduces the

Simview™.
Simview is
PSIM's
waveform
display and po
st-processing
program.
Chapter 4
introduces the
most
commonly
used

components of PSIM. Chapter 5 shows how PSIM can be used for analysis of power electronics circuits. 45 examples are studied in this chapter.

Chapter 6
shows how
you can
simulate
motors and
mechanical
loads in PSIM.
Chapter 7
introduces the
SimCoupler™
. Simcoupler
fuses PSIM

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with

**Simulink® by
providing an
interface for
co-simulation.
Chapter 8
introduces the
SmartCtrl®.
SmartCtrl is a
controller
design
software**

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This

**introduction to
the basic
principles of
electrical
engineering
teaches the
fundamentals
of electrical
circuit analysis
and introduces
MATLAB -**

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to write
efficient,
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programs to
solve
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problems of
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Analysis I

Foundations of

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This Handbook on circuit analysis is one of the few texts to address the needs of power systems engineers. Unlike many previous books on

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the subject, which have had an emphasis on low current, this book considers power and high current systems.

Consideration is given to both steady state and transient conditions and many examples of power system

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design are included.

The coverage is comprehensive with the first chapters

establishing the basics before the author

concentrates upon more advanced material. The text gives an in-depth analysis of such

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areas as

magnetically
coupled circuits,
three phase
systems, the non-
sinusoidal
behaviour of
electric circuits and
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be an invaluable
tool for professional
engineers in

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no single book that
covers the
mathematics,
circuits, and
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electromagnetic
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(EMC). This book aims to redress the balance by focusing on EMC and providing the background in all three disciplines. This background is necessary for many EMC practitioners who have been out of study for some time and who are

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attempting to follow and confidently utilize more advanced EMC texts. The book is split into three parts: Part 1 is the refresher course in the underlying mathematics; Part 2 is the foundational chapters in electrical circuit

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theory; Part 3 is the heart of the book: electric and magnetic fields, waves, transmission lines and antennas. Each part of the book provides an independent area of study, yet each is the logical step to the next area, providing a

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comprehensive course through each topic. Practical EMC applications at the end of each chapter illustrate the applicability of the chapter topics. The Appendix reviews the fundamentals of EMC testing and measurements.

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This book is designed as an introductory course for undergraduate students, in Electrical and Electronic, Mechanical, Mechatronics, Chemical and Petroleum engineering, who need fundamental

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knowledge of
electrical circuits.

Worked out
examples have
been presented
after discussing
each theory.

Practice problems
have also been
included to enrich
the learning
experience of the
students and

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professionals.

PSpice and

Multisim software
packages have

been included for
simulation of

different electrical
circuit parameters.

A number of

exercise problems

have been included
in the book to aid

faculty members.

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This book is designed as an introductory course in Electrical and Electronic-fundamental knowledge of electrical circuits. In this book, we provide a concise introduction to basic Circuit analysis. Basic

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knowledge of
Calculus and some
Physics are the only
prerequisites
required to follow
the topics discussed
in the book. We've
tried to explain the
various
fundamental
concepts of Circuit
theory most simply
without an

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overreliance on math. Also, we have tried to connect the various topics with real-life situations wherever possible. This way even first-timers can learn the basics of Circuit theory with minimum effort. Hopefully, the students will enjoy

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Frequency

Response, is the third of four books of a larger work, Fundamentals of Electronics. It is comprised of three chapters that describe the frequency dependent

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response of
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with an extensive
tutorial on creating
and using Bode
Diagrams that
leads to the
modeling and
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amplifiers. The second chapter starts by focusing on bypass and coupling capacitors and, after introducing high-frequency modeling of bipolar and field-effect transistors, extensively

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develops the high- and low-frequency response of a variety of common electronic amplifiers. The final chapter expands the frequency-dependent discussion to feedback amplifiers, the

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possibility of instabilities, and remedies for good amplifier design. Fundamentals of Electronics has been designed primarily for use in an upper division course in electronics for electrical

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engineering

students and for

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professionals.

Typically such a
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consisting of two

semesters or three

quarters. As such,

Active Filters and

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Response, and the first two books in the series, Electronic Devices and Circuit Applications, and Amplifiers: Analysis and Design, form an appropriate body of material for such

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explaining each
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Bobrow also places greater emphasis on signals and waveforms. This text features evaluation of initial conditions, phasor diagrams, and coverage of SPICE.

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Electrical Circuit
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Technology is a
fully
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text for courses in
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principles, circuit
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perspective,
it is
absolutely
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and designing of such Circuits, at the very least one should be able to identify components. Circuit analysis is one of basic subjects in engineering

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important for
Electrical and
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circuit
analysis is a
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the field. It is a very easy subject to learn and understand, but for this reason most of us end up taking the subject lightly and therefore

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misunderstand
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electronic hardware, and issues in logic design are also thoroughly examined. The author draws on more than twenty-five years of experience in Silicon Valley to present a plethora of troubleshooting techniques readers

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engineering, mining
engineering, and
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unique pedagogical
features such as a
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approach and
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providing numerous examples for the student to solve and practice before learning more complicated components and circuits. These exercises and problems will provide instructors with in-class activities and

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tutorials, thus establishing this book as the perfect complement to the more traditional texts. All examples and problems contain detailed analysis of various circuits, and are solved using a 'recipe' approach, providing a code

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Unlike books
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attempts to satisfy two goals: combine circuits and electronics into a single, unified treatment, and establish a strong connection with the contemporary world of digital systems. It will introduce a new way of looking not only at the treatment

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of circuits, but also at the treatment of introductory coursework in engineering in general. Using the concept of "abstraction," the book attempts to form a bridge between the world of physics and the world of large

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In particular, it attempts to unify electrical engineering and computer science as the art of creating and exploiting successive abstractions to manage the complexity of building useful

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design focuses on helping students complete the connection between theory and practice. Key concepts are explained clearly and illustrated by

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detailed

worked

examples.

***These are then
followed by***

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which allow

students to

work similar

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deliberately
written as a
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text on basic
electric circuit
theory. As
such, this
book employs***

***a novel
approach to
the exposition
of the material
in which
phasors and
ac steady-
state analysis
are introduced
at the
beginning.
This allows***

***one to use
phasors in the
discussion of
transients
excited by ac
sources, which
makes the
presentation
of transients
more
comprehensiv
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meaningful.

**Furthermore,
the machinery
of phasors
paves the road
to the
introduction of
transfer
functions,
which are then
used in the
analysis of**

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transients and the discussion of Bode plots and filters.

Another salient feature of the text is the

consolidation into one

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dependent
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operational
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sources are
introduced as
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for transistors
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small signal analysis. In the text, PSpice simulations are prominently featured to reinforce the basic material and understanding

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