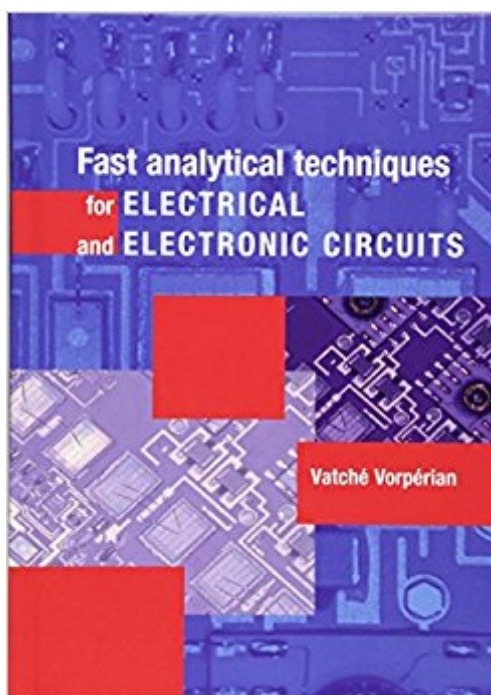


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# Fast Analytical Techniques For Electrical And Electronic Circuits



## Synopsis

The only current method of circuit analysis known to most engineers and students is nodal, or loop, analysis. Although it works well for obtaining numerical solutions, the method is almost useless for obtaining analytical solutions in all but the simplest cases. In this unique book, Vorpán©rian describes remarkable alternative techniques to solve complicated linear circuits in symbolic form and obtain meaningful analytical answers for any transfer function or impedance. Although not intended to replace traditional computer-based methods, these techniques provide engineers with a powerful set of tools for tackling circuit design problems. They also enhance understanding of circuit operation, making this an ideal course book, and numerous problems and worked examples are included. Originally developed by Professor David Middlebrook and others at the California Institute of Technology, the techniques are now widely taught at institutions and companies worldwide.

## Book Information

Series: Fast Analytical techniques for Electrical and Electronic Circuits

Hardcover: 492 pages

Publisher: Cambridge University Press; 1 edition (June 10, 2002)

Language: English

ISBN-10: 0521624428

ISBN-13: 978-0521624428

Product Dimensions: 6.8 x 1.1 x 9.7 inches

Shipping Weight: 2.6 pounds (View shipping rates and policies)

Average Customer Review: 4.3 out of 5 stars 5 customer reviews

Best Sellers Rank: #710,261 in Books (See Top 100 in Books) #84 in Books > Engineering & Transportation > Engineering > Energy Production & Extraction > Power Systems #618 in Books > Engineering & Transportation > Engineering > Electrical & Electronics > Circuits #3857 in Books > Science & Math > Nature & Ecology > Conservation

## Customer Reviews

"...the extended and new techniques described in this book are an indispensable set of tools for linear electronic circuit analysis and design...The book is a very timely and welcome one and deserves to be widely used. The numerous problems and worked examples in this book make it an ideal textbook for senior/graduate courses or a reference book that will play a significant role in enhancing students' understanding of circuit operation." Current Engineering Practice

The most widely used method of circuit analysis--nodal or loop analysis--works well for obtaining numerical solutions, but is almost useless for obtaining analytical solutions in all but the simplest cases. In this unique book, Vorperian describes a remarkable alternative technique to solve, almost by inspection, complicated linear circuits in symbolic form and obtain meaningful analytical answers for any transfer function or impedance. Although not intended to replace traditional methods, these techniques provide students and practicing engineers with a powerful set of tools for tackling circuit design problems.

Vorperian's book is a great companion to "fundamentals of Power Electronics" by Erickson and Maksimovic which I use for the power electronics course at USC. It is in the style and tradition of the late great Prof. Middlebrook of Caltech, emphasizing understanding and proper development of intuition for all facets of electronics. Not easy reading, but very rewarding, with a large number of problems after each chapter. All problems should be read and at least a few should be attempted in order to properly absorb the material and to master the "tricks of the trade". Although it is not stressed, but all the tricks and techniques are also applicable to all problems in physics and engineering which are described by differential equations with constant coefficients. Some such examples would be helpful to the beginner and would also build his confidence in general science. Maybe in the next edition...

This book teaches you how to develop the knack to analyze a circuit intuitively and quickly, for instance the author explains methods to figure out the poles and zeros of a circuit without having to go through the long network derivations. The book is based on the EET and NEET (Extra Element Theorem and Nth Extra Element Theorem) in which basically a complex circuit which can include both reactances and resistors can be reduced to simpler circuit involving only resistances. The book is very advanced, the author won't stop for a second to explain things like the Laplace or Fourier transform, it is assumed that the reader has a solid understanding of subjects like control theory, network analysis, calculus, etc... it is a grad level book or at least an upper undergrad book. That being said the book is packed full of examples so it is easily appreciated how to put things into practice. I highly recommend this book.

The definitive text on solving circuits and gaining insight to difficult analytical problems. Advanced techniques that do not get taught in university.

This book is great for graduating engineers who have to review what they learned. I would recommend it over 90% of the books out there on circuit analysis. Its great for self education. And its a great book for learning the EET theorem. I will suggest that you get the hardcover over the e-book. If you can get a copy get the hardcover.

This book is a work of academic excellence. The authors have solved a calculation problem that no one else could do. The practical problem with the book is that it shows how to do precise calculations of electronic circuit parameters that are rarely needed and can be done with a circuit simulator in less time. One example is the precise value of out of band gain and impedance of an amplifier.

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