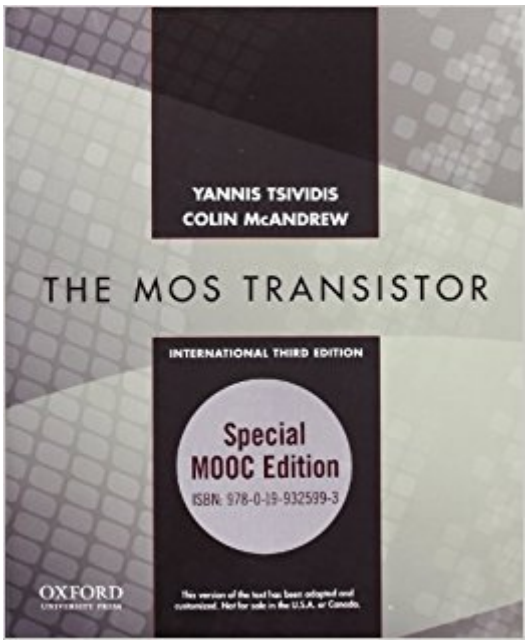
Operation And Modeling Of The MOS Transistor: Special MOOC Edition (The Oxford Series In Electrical And Computer Engineering)



Synopsis

Operation and Modeling of the MOS Transistor has become a standard in academia and industry. Extensively revised and updated, the third edition of this highly acclaimed text provides a thorough treatment of the MOS transistor--the key element of modern microelectronic chips.

Book Information

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Customer Reviews

Yannis Tsividis is Charles Batchelor Professor of Electrical Engineering at Columbia University. His work with MOS transistors began in 1975 as part of his Ph.D. work at the University of California, Berkeley, in the context of the design and fabrication of the first fully-integrated MOS operational amplifier. He is a Fellow of IEEE. Among his awards are the 1984 IEEE W. R. G. Baker Prize for the best IEEE publication and the 2003 IEEE International Solid-State Circuits Conference Outstanding Paper Award.Colin McAndrew became involved with modeling semiconductor devices in 1987 and has contributed to the development of models for MOS, bipolar, and passive devices. He developed the backward-propagation-of-variation (BPV) technique for statistical modeling and has been a primary advocate of the use of Verilog-A and compilers for device modeling. He has a Ph.D. from the University of Waterloo, works at Freescale Semiconductor, and is a Fellow of the IEEE.

This review is for the third-edition (ISBN 978-0-19-517015-3) of this book. All other reviews by

others prior to this review are for the second-edition (ISBN 0-19-517014-8). However, all other reviews are still applicable to the third-edition.As other reviewers already pointed out, this is a great electrical/electronics engineering textbook. The third-edition has been extensively revised and 700-page long while the second-edition is 600-page long. I have absolutely no doubt in my mind that people who enjoyed the second-edition will also enjoy the third-edition even more and will feel that the contents of the book are up-to-date.The mathematical requirements to understand this book are introductory differential and integral calculus. And one must be willing to sit down with a pencil and paper to derive many equations in the book. Furthermore, one must have ready access to computer with mathematical software such as MATLAB with Optimization Toolbox installed. I found myself using MATLAB commands such as "fsolve" a lot to plot the graphs that I see on the book.This book covers only Si (silicon) bulk MOS transistors and does not cover the following MOS topics.SOI transistorsGaAs/InP transistorsRF modelingIn my opinion, the authors intended to write a textbook, not an encyclopedia. And it becomes very clear why some topics are left out of the book as one reads through the book. The books/papers covering missing topics are listed in Bibliography section at the end of each chapter. The authors never use a term such as "It is easy to see..." and skip explanations of certain topics in the book. If a topic needs to be explained, the authors went great lengths to explain the topic. The authors are also strict about using symbols, especially Greek symbols. A symbol has the same meaning throughout the entire book. This consistent symbol usage itself is not an easy feat to achieve because I have seen in many other books that one symbol means one thing in one chapter but means completely something else in another chapter.Finally, the authors indicate in the book that additional material and errata will be posted on the following Web site.[..]

This book covers every little nuance about the MOS transistor, I havent seen any other book as comprehensive as this one focusing soley on the MOS transistor, a course on semiconductor physics is a pre-requisite, I recommend reading Sedra/Smith book first as an introduction to the subject. The book is written from a physics perspective rather than an engineering perspective, meaning that this is not the book you want if you are looking for applications or useful circuits.What I really disliked about the book is the construction of the book, some pages of my book are completely screwed up, for example: one of the pages is composed of 2 sheets of paper pasted on top of each other, the first half of the page is one piece of paper and at the middle of the page pasted on top of the first piece of paper theres a second piece of paper which makes up the second half of the page, weird stuff like that happens all over the book. The binding is horrible, the page

block completely unglued from the spine of the book, and I had to re-glue it by myself, otherwise the pages would start falling off.I've experienced this trend of poor quality hardcover books many times, when someone buys a hardcover book he/she expects to keep that book for a long time, yet it seems that today hardcover books are completely disposable, editorials unethically take advantage by using cheap binders and materials whilst overpricing their books. The cheap international edition of this book being sold in developed countries seems to have better quality than the hardcover US edition!, yet it costs merely a fraction of the hardcover editon's price.

First, On the front and back covers it states "This version of the text has been adapted and customized. Not for sale in the U.S.A. or Canada."It might be of interest to those involved in MOS design and manufacture, But it does not cover CMOS, which is a primary application of MOSFETs.While it might be suitable for an advanced graduate text for students who have already had a course (or two) on semiconductor device physics, it is difficult to follow for a beginning course since it is largely mathematical with an insufficient number of figures and few energy band diagrams which this reviewer believes is a major defect.

This book is the best one for MOSFET, very clear, very detailed,recommend every one working on seminconductor read it;It will make you become a expert of MOSFET.Thanks Professor Tsividis and McAndrew. Great book!

I bought this book straight from Oxford University Press because it was out of stock on . It is the softcover International Third Edition with a sticker on the cover that says "Special MOOC Edition". I don't know if there are any other differences between it and the hardcover third edition, but I believe that they are essentially the same because Professor Tsividis who is teaching the MOOC on MOS Transistors told us that we could buy the MOOC Edition.I like this book and the way that it is written although I have not gotten all the way through it yet because the class (on Coursera) is just getting started.

This is probably the best textbook I have used in my entire academic career (MS student in Electrical Engineering). If you want to know about the MOS transistor, read this book. The author assumes knowledge approximate to that of an undergraduate class in semiconductor devices.From a great chapter on the MOS capacitor, to HF modeling, to small dimension effects, I keep returning to this book to refresh my memory on just about every aspect of MOSFET operation. Not only does

it have all of the math and physics you want, but the actual writing is pretty insightful, too.This book is to MOSFETS what Grey & Meyer are to analog IC design.

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