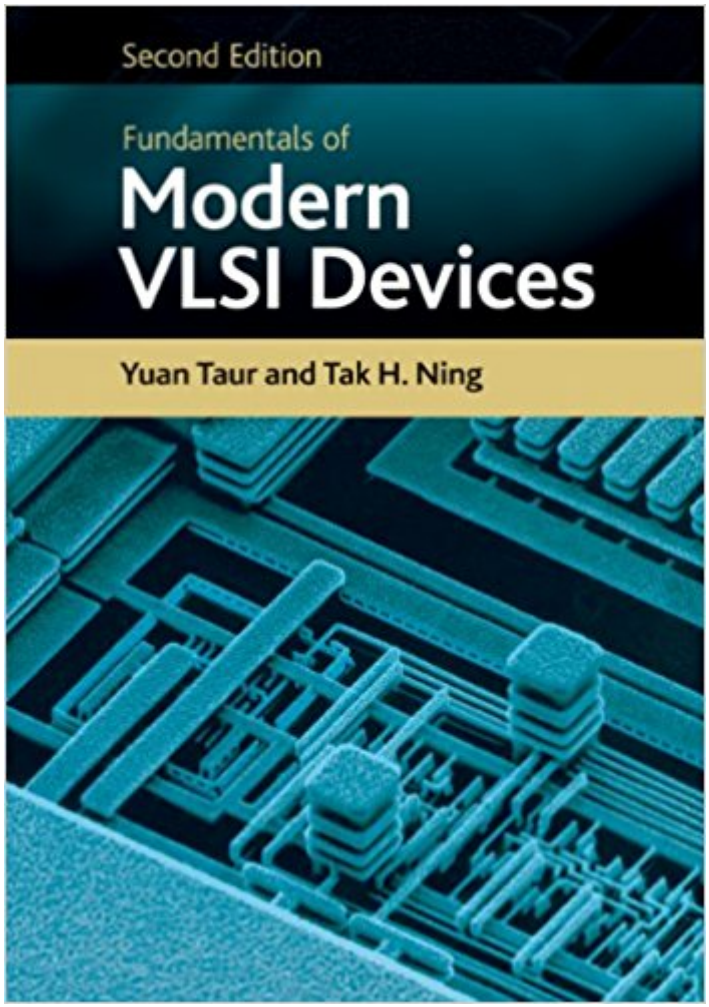
Fundamentals Of Modern VLSI Devices



Synopsis

Learn the basic properties and designs of modern VLSI devices, as well as the factors affecting performance, with this thoroughly updated second edition. The first edition has been widely adopted as a standard textbook in microelectronics in many major US universities and worldwide. The internationally renowned authors highlight the intricate interdependencies and subtle trade-offs between various practically important device parameters, and provide an in-depth discussion of device scaling and scaling limits of CMOS and bipolar devices. Equations and parameters provided are checked continuously against the reality of silicon data, making the book equally useful in practical transistor design and in the classroom. Every chapter has been updated to include the latest developments, such as MOSFET scale length theory, high-field transport model and SiGe-base bipolar devices.

Book Information

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Customer Reviews

The physicist in me wants to give this book 2 stars and the mathemetician in me wants to give it 5 stars, while the engineer and organizer in me wants to give it 4 stars. End result is 4 stars, but frustrated with the linear grading system. Here’s a bit more on why.Yes, as previous reviewers have said, this book gives you what many similarly named books don’t: an advanced-level, industrial-view, practioner look at semiconductor device operation and design. It is well organized from that standpoint, which originally drew me in wholeheartedly.My criticism is that when you really get into it -- and I have, by reading every page from start to finish -- the authors sometimes only use

the math equations to explain why things happen. I guess this is okay in some science topics say, for abstract problems in QM matrix formalism when the "thing" is difficult to visualize physically, but this is a working, quasi-classical, real-world "machine"; physical explanations should almost always be possible. Writing about the concepts in addition to the math equations is important because most of us don't remember dozens of math equations day-to-day, but only the relationships often buttressed up by physical pictures. For example, on page 187 an equation (and equations are models of reality themselves containing their own limitations) is used to show (prove?) "the gate work function has a major effect on channel profile design, since, through the V_fb term, it has a strong influence on the MOSFET threshold voltage". In addition to the math symbolic relationship, this could also be said with physical underpinnings or something more physical sounding than "through the V_fb term".