Fundamentals of
Modern
VLSI Devices

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CAMBRIDGE

Fundamentals of Modern VLSI Devices

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 tradeoffs between various practically important device parameters. An in-depth discussion of device scaling and scaling limits of CMOS and bipolar devices is also provided. 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.

New to this edition:

- **Every chapter has been updated** to include the latest developments, such as MOSFET scale length theory, high-field transport models, and SiGe-base bipolar devices.
- **Two new chapters** cover read and write operations of commonly used SRAM, DRAM, and non-volatile memory arrays, as well as silicon-on-insulator (SOI) devices, including advanced devices of future potential.
- **More useful appendices**: The number has doubled from 9 to 18, covering areas such as spatial variation of quasi-Fermi potentials, image-force-induced barrier lowering, and power gain of a two-port network.
- **New homework exercises** at the end of every chapter engage students with real-world problems and test their understanding.

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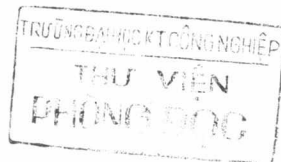
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SECOND EDITION

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