FURTHER READING AND REFERENCES

APPENDIX N

General

- Ashby, D., ed., *Circuit Design: Know It All.* Newnes (2008). A collection of fascinating electronics engineering stuff from 14 acclaimed authors.
- Camenzind, H., Much Ado About Almost Nothing, Man's Encounter with the Electron. Booklocker.com (2007). Fascinating stories about electronics, by the famed designer of the 555.
- Dobkin, B. and Williams, J., eds., Analog Circuit Design: A Tutorial Guide to Applications and Solutions. Newnes (2011). Excellent selection of informative and wellwritten application notes from Linear Technology. Lively and entertaining, too.
- Dunn, P. C., *Gateways into Electronics*. Wiley (2000). Fascinating physics-based approach to electronics; deep coverage of critical areas.
- Jones, R. V., *Instruments and Experiences: Papers on Measurement and Instrument Design*. Wiley (1988). Classic on instrument design, based on Jones' papers.
- Lee, T. H., *The Design of CMOS Radio-Frequency Integrated Circuits*. Cambridge University Press (2nd ed., 2003). From the originator of gigahertz CMOS comes this delightful volume, covering much more than its humble title suggests. Terrific introductory chapter on the history of radio.
- Pease, R. A., *Troubleshooting Analog Circuits*. Butterworth–Heinemann (1991). The curmudgeon-in-chief reveals his tricks.
- Purcell, E. M., and Morin, D. J., *Electricity and Magnetism*. Cambridge University Press (2013). Excellent textbook on electromagnetic theory. Relevant sections on electrical conduction and analysis of ac circuits with complex numbers.
- Scherz, P. and Monk, S., *Practical Electronics for Inventors*. McGraw-Hill (3rd ed., 2013). The title says it all.
- Sedra, A. S. and Smith, K. C., *Microelectronic Circuits*. Oxford University Press (6th edition, 2009). Popular classic engineering text.
- Senturia, S. D., and Wedlock, B. D., Electronic Circuits

and Applications. Wiley (1975). Good introductory engineering textbook.

- Sheingold, D. H., ed., *Nonlinear Circuits Handbook*. Analog Devices (1976). Highly recommended.
- Sheingold, D. H., ed., *The Best of Analog Dialog*, 1967 to 1991. Analog Devices (1991). Outstanding collection of analog-engineering techniques.
- Terman, F. E., *Radio Engineers' Handbook.* McGraw-Hill (1943). Three score and ten years later it continues to amaze, with excellent sections on passive circuit elements and other basic engineering.
- Tietze, U., and Schenk, Ch., *Electronic circuits: Handbook* for Design and Applications. Springer-Verlag (2nd edition, 2008). Spectacular all-around reference.
- Williams, J., ed., Analog Circuit Design: Art, Science, and Personalities. Butterworth–Heinemann (1991). Idiosyncratic collection of wisdom from 22 analog gurus.
- Williams, J., ed., *The Art and Science of Analog Circuit Design*. Butterworth–Heinemann (1998). The sequel: 16 analog gurus dispense yet more wisdom.

Handbooks

- Fink, D. G., and Beaty, H. W., eds., *Standard Handbook for Electrical Engineers*. New York: McGraw-Hill (16th ed., 2012). Tutorial articles on electrical engineering topics.
- Jordan, E., ed., Reference Data for Engineers: Radio, Electronics, Computer, and Communications. Howard W. Sams & Co. (9th ed., 2001). General-purpose engineering data.
- "Temperature Measurement Handbook." Stamford, CT: Omega Engineering Corp. (revised annually). Thermocouples, thermistors, pyrometers, resistance thermometers.

BJTs and FETS

Camenzind, H., *Designing Analog Chips*. Virtualbookworm.com and available online (2005). Inspiring book by a real world analog IC designer; includes the story of his design of the 555 at Signetics (now NXP).

- Ebers, J. J., and Moll, J. L., "Large-signal behavior of junction transistors." *Proc. I.R.E.* **42**:1761–1772 (1954). The Ebers–Moll equation is born.
- Gray, P. R., Hurst, P. J., Lewis, S. H., and Meyer, R. G., Analysis and Design of Analog Integrated Circuits.
 Wiley (5th ed., 2009). The classic go-to book for a real understanding of integrated linear circuit design.
- Howe, R.T. and Sodini, C. G., *Microelectronics, an Integrated Approach.* Prentice-Hall (1996). Introductory IC design.
- Mead, C. and Conway, L., *Introduction to VLSI Systems*. Addison-Wesley (1980). Device physics and circuit design; a classic.
- Muller, R. S., and Kamins, T. I., *Device Electronics for Integrated Circuits*. Wiley (1986). Transistor properties in ICs.
- Sze, S. M., *Physics of Semiconductor Devices*. Wiley (1981). The classic.
- Tsividis, Y. P., and McAndrew, C., *Operation and Modeling of the MOS Transistor*. McGraw-Hill (3rd ed., 2010).

SPICE

- Cheng, Y. and Hu, C., *MOSFET Modeling & BSIM3 User's Guide*. Springer (1999).
- Kielkowski, R., *Inside SPICE*. McGraw-Hill (1998). A short book with hints about SPICE convergence, etc.
- Liu, W., MOSFET Models for SPICE Simulation: Including BSIM3v3 and BSIM4. Wiley (2001). If you use SPICE to analyze MOSFET designs you need this book.
- Massobrio, G. and Antognetti, P., *Semiconductor Device Modeling With SPICE*. McGraw-Hill (2nd ed., 1998). Modeling BJTs, JFETs and MOSFETs.
- Ytterdal, T., Cheng, Y., and Fjeldy, T. A., *Device Modeling for Analog and RF CMOS Circuit Design*. Wiley (2003). MOSFET device physics, and SPICE modeling, noise in MOSFETs.

Amplifiers, Transducers, and Noise

- Buckingham, M. J., *Noise in Electronic Devices and Systems*. Wiley (1983).
- Hollister, A. L., *Wideband Amplifier Design*. Scitech (2007). Wideband amplifier design techniques using BJTs and FETs, with extensive SPICE analysis.

- Morrison, R. Grounding and Shielding Techniques in Instrumentation. Wiley (1986).
- Motchenbacher, C. D. and Connelly, J. A., *Low-noise Electronic System Design*. Wiley (1993). A serious indepth treatment of low-noise amplifier design.
- Netzer, Y., "The design of low-noise amplifiers." *Proc. IEEE* **69**:728–741 (1981). Excellent review.
- Ott, H., *Noise Reduction Techniques in Electronic Systems*. Wiley (1988). Shielding and low-noise design.
- Radeka, V., "Low-noise techniques in detectors." Ann. Rev. Nucl. and Part. Physics, 38:217–277 (1988). Amplifier design, signal processing, and fundamental limits in charge measurement.

Op-amps

- Applications Manual for Operational Amplifiers, for Modelling, Measuring, Manipulating, & Much Else.
 Philbrick/Nexus Research (1965). Charming compendium from the originators of the first commercial op-amp; these are collectors' items, long out of print.¹
- Carter, B., and Brown, T. R., *Handbook of Operational Amplifier Applications*. Rework of the classic Burr– Brown handbook, described by Carter as a "treasure... some of the finest works on op amp theory that I have ever seen."
- Frederiksen, T. M., *Intuitive IC op-amps*. Santa Clara, CA: National Semiconductor Corp. (1984). Extremely good treatment at all levels.
- Graeme, J. G., *Applications of Operational Amplifiers: Third Generation Techniques.* McGraw-Hill (1987). One of the Burr-Brown series.
- Jung, W. G., ed., Op Amp Applications Handbook. Newnes (2004). Fascinating history section, excellent up-todate detail.
- Jung, W. G., IC op-amp Cookbook. Howard W. Sams & Co. (3rd ed., 1986). Lots of circuits, with explanations. See also Jung's Audio IC Op-amp Applications.
- Soclof, S., *Analog Integrated Circuits*. Prentice-Hall (1985). Detailed IC-designer information, useful for IC users as well.
- Zumbahlen, H., *Linear Circuit Design Handbook*. Newnes (2008). Things you need to know from Analog Devices engineers.

¹ But happily resurrected at http://www.analog.com/library/ analogdialogue/archives/philbrick/computing_ amplifiers.html.

Audio

- Duncan, B., *High Performance Audio Power Amplifiers*. Newnes (1996). Excellent review of professional audio power amplifier design.
- Hickman, I., *Analog Electronics*. Newnes (2nd ed., 1999). Interesting overview, one wishes he had written more.
- Hood, J. L., *The Art of Linear Electronics*. Newnes (1998). Audio electronics, including FM.
- Pohlman, K. C., *Principles of Digital Audio*. McGraw-Hill (3rd ed., 1995). All aspects of digital audio; nonmathematical, an easy read.
- Self, D., *Small Signal Audio Design*. Focal Press (2010). Audio design basics and tricks, with a special view from an industry master.
- Strawn, J., ed., *Digital Audio Signal Processing*. A-R Editions Inc. (Madison, WI; 1985). The first article (by Moore) is a magnificent introduction to the mathematics of digital signal processing. Sadly, this volume is out of print.
- Watkinson, J., *The Art of Digital Audio*. Focal Press (3rd ed., 2000). Another nice book on digital audio.

Filters and Oscillators

- Hilburn, J. L., and Johnson, D. E., *Manual of Active Filter Design*. McGraw-Hill (1982).
- Lancaster, D., *Active Filter Cookbook.* Howard W. Sams & Co. (1979). Explicit design procedure; easy to read.
- Matthys, R. J., *Crystal Oscillator Circuits*. Wiley (1983), Krieger Publishing (revised, 1992).
- Parzen, B., *Design of Crystal and Other Harmonic Oscillators*. Wiley (1983). Discrete oscillator circuits.
- Williams, A. and Taylor, F., *Electronic Filter Design Handbook*. McGraw-Hill (4th ed., 2006). Practical filter design, with formulas, tables, and many examples.
- Zverev, A. I., *Handbook of Filter Synthesis*. Wiley (1967). Extensive tables for passive *LC* and crystal filter design.
- See also Graeme, J. G., under op-amp listings.

Power, Regulation, and Control

- Basso, C. P., *Switch-Mode Power Supplies: SPICE Simulations and Practical Designs.* McGraw-Hill (2008). The title says it all.
- Billings, K. and Morey, T., *Switchmode Power Supply Handbook.* McGraw-Hill (3rd ed., 2010). Highly readable and comprehensive treatment of an oftenconfusing topic.

- Erickson, R. W. and Maksimovic, D., *Fundamentals of Power Electronics*. Springer (2nd ed 2001). Learn how to compensate an SMPS feedback loop.
- Grover, F. W., *Inductance Calculations*. Dover (2009 reprint of the 1946 classic). Formulas, tables, and graphs for the inductance of just about anything.
- Hnatek, E. R., *Design of Solid-state Power Supplies*. Van Nostrand Reinhold (1989). Switching supplies.
- MacFadyen, K. A., *Small Transformers and Inductors*. Chapman & Hall (1953). Learn how to calculate leakage inductance in your transformers.
- Maniktala, S., *Switching Power Supplies: A to Z.* Newnes (2nd ed, 2012). Filled with useful unusual material, like magnetics design with the all-important AC-resistance loss analysis.
- Pressman, A., Billings, K., and Morey, T., Switching Power Supply Design. McGraw-Hill (3rd ed., 2009). Standard comprehensive book for a two-week introductory course in SMPS design.
- Rogers, G. and Mayhew, Y., *Engineering Thermodynamics: Work and Heat Transfer.* Prentice-Hall (4th ed, 1996). Develop a better understanding of thermal management in electronics.
- Snelling, E. C., Soft Ferrites. Butterworth–Heinemann (2nd ed, 1988). The bible for inductor and transformer design.

Optics and Light

- Friedman, E. and Miller, J. L., *Photonics Rules of Thumb: Optics, Electro-Optics, Fiber-Optics, and Lasers.* McGraw-Hill (2003). What's *this* doing here? Well, it's an amazing collection of coolstuff, both serious and quixotic (e.g., "crickets as thermometers.")
- Graeme, J. G., *Photodiode Amplifiers: Op Amp Solutions*. McGraw-Hill (1995). The low-down on transimpedance amplifiers.
- Hobbs, P. C. D., *Building Electro-Optical Systems: Making It All Work.* Wiley (2nd ed., 2009). Great balance of theory and practice.
- Lenk, R. and Lenk, C. *Practical Lighting Design with LEDs*. Wiley (2011).
- Schubert, E. F. Light-Emitting Diodes. Cambridge University Press (2nd ed., 2006). LED device physics, practical devices, color physics.
- Yariv, A., *Introduction to Optical Electronics*. Rinehart & Winston (1976). Physics of opto-electronics, lasers, and detection.

High-speed Digital and RF

- Hagen, J. B., Radio-Frequency Electronics: Circuits and Applications. Cambridge University Press (2nd ed., 2009). Refreshingly different, an insight per page.
- Johnson, H. and Graham, M., *High Speed Digital Design:* A Handbook of Black Magic. Prentice-Hall (1993).
 Ringing, cross-talk, ground bounce, etc. – a musthave if you're doing fast digital design.
- Johnson, H. and Graham, M., *High Speed Signal Propagation: Advanced Black Magic*. Prentice-Hall (2003). Techniques for pushing the limits of high-speed signal transmission.
- Johnson, R. C., ed., *Antenna Engineering Handbook*. McGraw-Hill (3rd ed., 1992). Comprehensive, excellent tables and design information.
- Krauss, J. D. and Marhefka, R. J., *Antennas for All Applications*. McGraw-Hill (3rd ed., 2001). Highly readable and usable text.
- Ramo, R., Whinnery, J. R. and Van Duzer, T., *Fields and Waves in Communication Electronics*. Wiley (3rd ed., 1994). A classic electricity and magnetism text, with emphasis on communications.
- Roy, K. and Prasad, S., Low-Power CMOS VLSI Circuit Design. Wiley (2000).
- Sevick, J., *Transmission Line Transformers*. Noble (4th ed., 2001). Practical guide to understanding and building RF transformers.

Digital Signal Processing and Communication

- Bracewell, R. N., *The Fourier transform and its applications*. McGraw-Hill (3rd ed., 1999). The classic in this field.
- Brigham, E. O., *The Fast Fourier Transform and its Applications*. Prentice-Hall (1988). Highly readable.
- Oppenheim, A. V. and Schafer, R. W., *Discrete-Time Signal Processing*. Prentice-Hall (3rd ed., 2009). Wellreceived classic on digital signal analysis.
- Sklar, B., *Digital Communications: Fundamentals and Applications*. Prentice-Hall (2nd ed., 2001). Fine introduction to all aspects of digital communications.

Logic, Conversion, and Mixed-signal

- Best, R. E., *Phase-locked Loops*. McGraw-Hill (6th ed., 2007). Advanced techniques.
- Brennan, P. V., *Phase-Locked Loops: Principles and Prac*tice. McGraw-Hill (1966).
- Gardner, F. M., *Phaselock Techniques*. Wiley (1979). The classic PLL book: emphasis on fundamentals.
- Kester, E., ed., *The Data Conversion Handbook*. Newnes (2004). Includes an excellent history of data conversion, and extensive detail on the nuances of conversion, timing, bandwidth, etc.
- Lancaster, D., *CMOS Cookbook*. Howard W. Sams & Co. (2nd ed., 1997). Good reading, down-to-earth applications. Includes widely used (but rarely mentioned) M²L (Mickey Mouse logic) technique.
- Rohde, U. L., *Digital PLL Frequency Synthesizers*. Prentice-Hall (1983). Theory and lots of circuit detail.
- Sheingold, D. H., ed., *Transducer Interfacing Handbook*. Analog Devices (1980).

Computers and Programming

- Hancock, L. and Krieger, M., *The C Primer*. McGraw-Hill (1982). Introduction for beginners.
- Harbison, S. P. and Steele, G. L., Jr., *C: A Reference Manual.* Prentice-Hall (1987). Readable and definitive; has ANSI extensions.
- Wescott, T., *Applied Control Theory for Embedded Systems*. Newnes (2006). From the author of *PID without a Ph.D*.

Miscellaneous

- Grätzer, G., *More Math into LTEX*. Springer (4th ed., 2007). Best single reference on typesetting with LATEX (the software typesetting language in which this book was written).
- Kleppner, D. and Ramsey, N., *Quick Calculus*. Wiley (2nd ed., 1985). The title is honest, it's the fastest way to learn calculus. Don't be put off by the book's vintage (hey, calculus itself goes back almost four centuries).