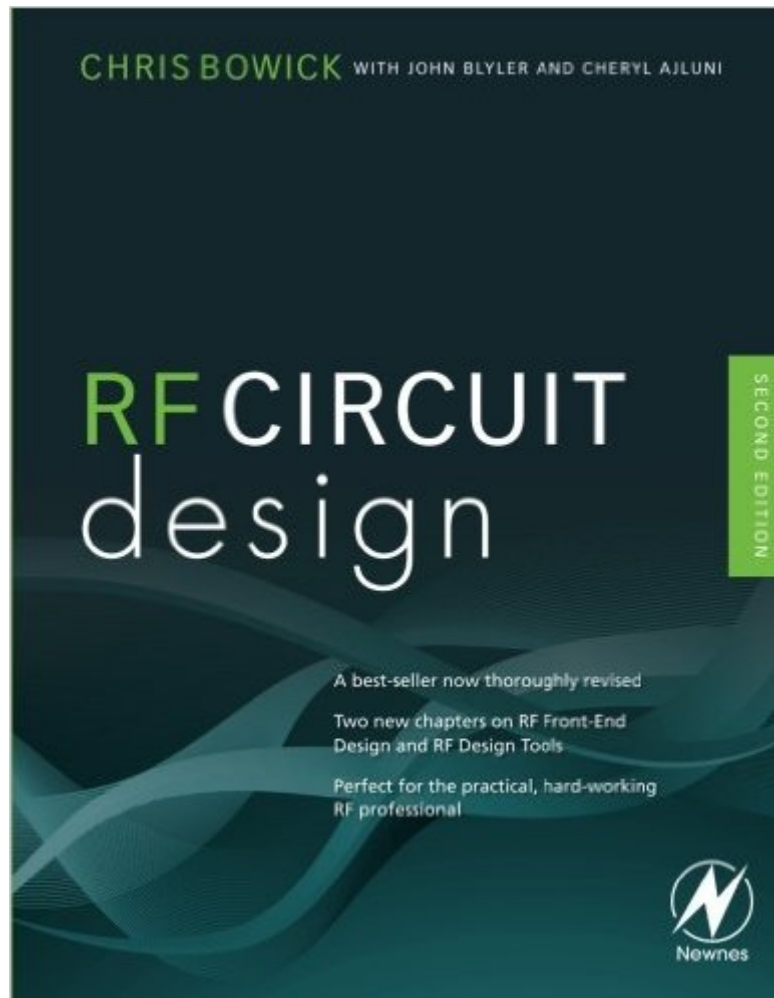


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# RF Circuit Design, Second Edition



## Synopsis

It's Back! New chapters, examples, and insights; all infused with the timeless concepts and theories that have helped RF engineers for the past 25 years! RF circuit design is now more important than ever as we find ourselves in an increasingly wireless world. Radio is the backbone of today's wireless industry with protocols such as Bluetooth, Wi-Fi, WiMax, and ZigBee. Most, if not all, mobile devices have an RF component and this book tells the reader how to design and integrate that component in a very practical fashion. This book has been updated to include today's integrated circuit (IC) and system-level design issues as well as keeping its classic "wire lead" material. Design Concepts and Tools Include

- The Basics: Wires, Resistors, Capacitors, Inductors
- Resonant Circuits: Resonance, Insertion Loss
- Filter Design: High-pass, Bandpass, Band-rejection
- Impedance Matching: The L Network, Smith Charts, Software Design Tools
- Transistors: Materials, Y Parameters, S Parameters
- Small Signal RF Amplifier: Transistor Biasing, Y Parameters, S Parameters
- RF Power Amplifiers: Automatic Shutdown Circuitry , Broadband Transformers, Practical Winding Hints
- RF Front-End: Architectures, Software-Defined Radios, ADC's Effects
- RF Design Tools: Languages, Flow, Modeling

Check out this book's companion Web site at:

<http://www.elsevierdirect.com/companion.jsp?ISBN=9780750685184> for full-color Smith Charts and extra content! \*Completely updated but still contains its classic timeless information\* Two NEW chapters on RF Front-End Design and RF Design Tools\*Not overly math intensive, perfect for the working RF and digital professional that need to build analog-RF-Wireless circuits

## Book Information

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## Customer Reviews

RF design can either be understood from first principles through Maxwell's equations (wave theory) or from circuit analysis through the basic passive and active electronic components. This book takes the latter approach because it is much easier and far more practical for building actual circuits. Also the mathematics can be held to a minimum with this approach. One of the main reasons the first edition of this book was so popular was the emphasis on reading and understanding Smith charts. This provides a very quick visual entry into RF design without the heavy emphasis on differential equations and boundary conditions. The book under review is the second edition, which updates the (now more than 25 years old) first edition with two new chapters on RF Front-End Design (chapter 8) and RF Design Tools (chapter 9). Chapter 8 covers modern radio front-end design including sections on intermodulation, receiver architecture and software defined radios. Chapter 9 gives an overview of design tools before going into a detailed case study of IEEE 802.11a in CMOS using Analog Office software. It is instructive to see both how many things have changed and yet how the basic principles have remained the same. Even though the individual NPN transistors mentioned in the original chapters are long gone (replaced by highly integrated op-amps and LNAs), the passive components are still used in designs every day. And the transistor design issues (S parameters, transistor biasing) still apply today in the multi-GHz range just as they did in the MHz range a quarter of a century ago.

I have read this book from cover to cover and I love it. The authors writing style is very easy to follow and most of the time the concepts are further explained with solved examples, which makes it easier to understand. However there are some times that concepts just mentioned and that leaves you wondering, but that's not very common in this book. Even though the cover says "thoroughly revised" there are still a lot of typos like duplicated words, and a few mistakes in the solved exercises, nothing really serious though. However there's a reference to a data sheet in the first chapter that I'm still trying to find. I would say that you need prior knowledge to really understand this book, like electric circuits theory, BJT and FET transistor operation, biasing and transistor configurations, transmission lines, modulation and types of modulation (AM, FM, QAM, PSK, etc.), also knowing Matlab and a bit of feedback theory wouldn't hurt. Now I will try to give a very brief overview of each chapter, in my opinion, the meat of the book is in the first 6 chapters, the rest of

the chapters are introductory at best, the last chapter on RF Design Tools is just out of my league. In general I felt that the book was a bit overcrowded with datasheets and tables as to "fill in" the space and make the book a bit thicker than it actually is, however its not just random data, since most of the time it is relevant to the subject in question. Chapter 1: Gives you the basics, but in a more realistic manner, meaning that you study how real inductors, capacitors and resistors work, along with their parasitic effects, and behavior at different frequencies, in contrast to the approach you usually learn in an electric circuits book using ideal components.

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