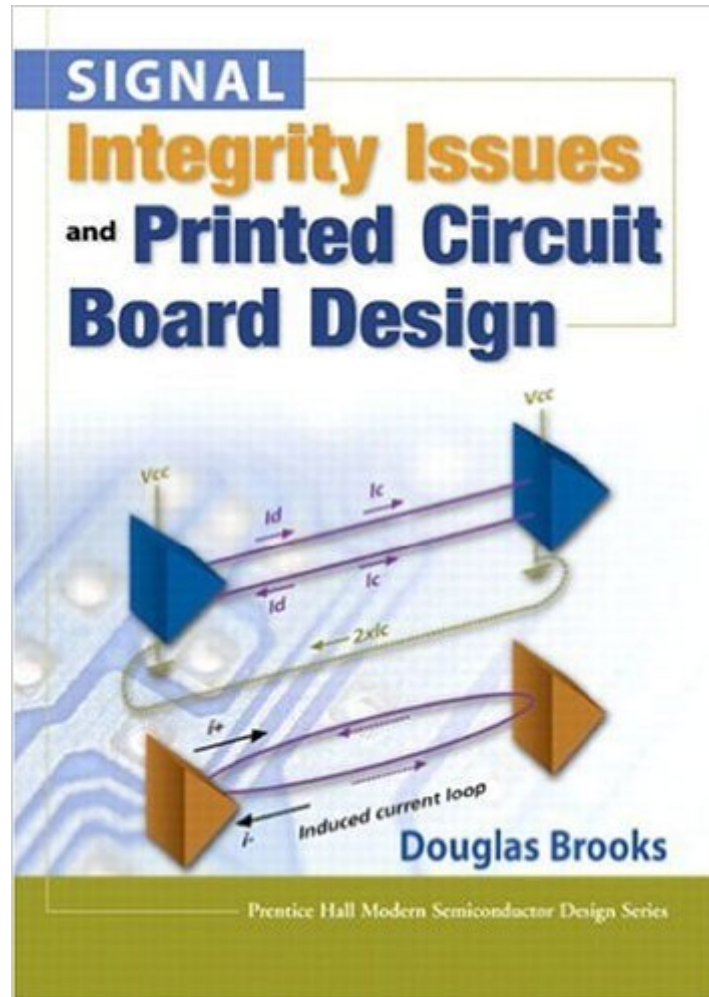


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# Signal Integrity Issues And Printed Circuit Board Design



## Synopsis

This book covers the increasingly complex area of Signal Integrity issues in PCB design thoroughly, but without a need for great technical depth of understanding. Section 1 is an overview of electrical engineering principles that can serve as an introductory course for someone without any engineering education, or a review for someone who has. Section 1 can be skipped for people who already have a solid understanding in EE. Section 2 covers the major causes of signal integrity problems on printed circuit boards (a) EMI, (c) crosstalk, (c) signal reflections and transmission lines, and (d) power system decoupling (bypass capacitors). Each topic is covered in depth with real world illustrations and numerous examples. Two complete chapters are devoted to examples of how high-end computer simulation software packages view signal integrity problems and their solutions.

## Book Information

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## Customer Reviews

As an educator, lecturer and practicing designer I am given many books to read and make comment on. I find very few books that are able to bridge the chasm between the needs of a beginner learning about signal integrity and the needs of a professional desperate to solve design problems. This book is an excellent primer and reference for understanding the interrelationship between the board layout and the signal integrity problem. This book details design solutions to classic signal integrity problems and educates the novice in understanding the reasoning behind the solutions. There is a lot of nonsense being written about signal integrity and few people have the resources to filter out the chaff from hay. This book proves every principle presented with tested board layouts,

demonstrated engineering principles, or documented laboratory results. Some people can see the world in formulas and some see the world pictorially. This book is rich in both forms of expressionism and its presentation will not exasperate the PCB designer who sees the world visually, or frustrate the engineer seeking equations for design representation. This book has been added to the required reading list for our PCB layout designers and product development engineering teams.

Brook's book is exceptional in the clarity of the writing, esp. in explaining key concepts that most engineers are fuzzy on. This book is great at giving engineers an intuitive feel for basic electromagnetics and how it relates to signal integrity and emi. It's main strength (and to some it's major weakness) is that it avoids the mess of equations of better known books like Johnson's "High-Speed Digital Design". Brooks is also a good writer, and he writes very clearly. Don't get this book, if you already understand the subject, since it doesn't cover advanced material. However, this is essential reading for those who don't have a clue or for those (like me), who've memorized a lot of emi guidelines, without really understanding why they're necessary. Given the book's title, the only area of improvement I can think of is a chapter or appendix on basic pcb manufacturing and terminology (buried vias, microvias, antipads, etc).

I'm a working EE with some design & PCB experience and wanted to learn more about the problems encountered when working with higher speed signals. I have seen what happens when you don't take the correct approach..boards that don't work, and many dollars wasted! Horrible!! I sought out this book after reading articles on Douglas Brook's company website(UltraCAD Design) and some of his information goes against what you're taught in college. But he backs up his info with experiments & experience instead of regurgitating "textbook learning." A lot of so-called "experienced" engineers could learn something from his articles and this book. This book was worth the money. The book seems to separate the "PCB designer" from the "design engineer" but is fine nonetheless. Probably 40% of the book is a recount of basic electronics theory for caps, resistors, formulas, and so on. However, the rest of the book covers the hows and whys of induced and common ground currents (& noise), trace impedance calculation & simulations, and more. Not a "perfect" book, but in my opinion it is worth the money and will supply you with plenty of info to take a good engineering approach to your next major design project!! I liked this book because D. Brooks displays real-world knowledge.

Great book. Very good explanation of basic electrical engineering background material in an intuitive way combined with very good information on how to properly design for good signal integrity on a pcb. I particularly liked it when he brought up design guidelines that are controversial and gave his own thoughts on their validity based on ultra cads experience.

great book dealing with issues not found elsewhere

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