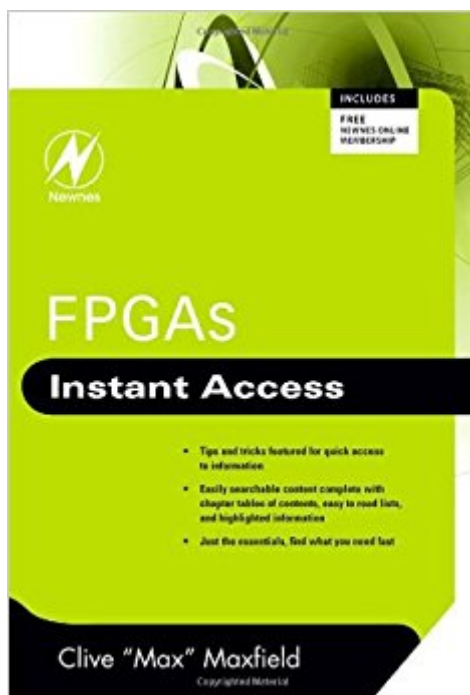


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# FPGAs: Instant Access



## Synopsis

FPGAs are central to electronic design! The engineers designing these devices are in need of essential information at a moment's notice. The Instant Access Series provides all the critical content that a computer design engineer needs in his or her daily work. This book provides an introduction to FPGAs as well as succinct overviews of fundamental concepts and basic programming. FPGAs are a customizable chip flexible enough to be deployed in a wide range of products and applications. There are several basic design flows detailed including ones based in C/C++, DSP, and HDL. This book is filled with images, figures, tables, and easy to find tips and tricks for the engineer that needs material fast to complete projects to deadline.

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CHAPTER 8 Choosing the Right Device

\*Tips and tricks feature that will help engineers get info fast and move on to the next issue\*

\*Easily searchable content complete with tabs, chapter table of contents, bulleted lists, and boxed features\*

\*Just the essentials, no need to page through material not needed for the current project

## Book Information

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## Customer Reviews

Clive "Max" Maxfield received a BS in Control Engineering from Sheffield Polytechnic, England in 1980. He began his career as a mainframe CPU designer for International Computers Limited (ICL) in Manchester, England. Max now finds himself a member of the technical staff (MTS) at Intergraph Electronics, Huntsville, Alabama. Max is the author of dozens of articles and papers appearing in magazines and at technical conferences around the world. Max's main area of interest are currently focused in the analog, digital, and mixed-signal simulation of integrated circuits and multichip modules.

I really like this book and while it may have been written in 2005 it will give you a crash course in the field of FPGA's, I used this as a stop on my way to actually programming and understanding FPGA's. Follow this book up with actually purchasing a FPGA and a book (such as Verilog by example) to move forward. I knocked one star off because while I felt the book was extremely informative there were some seriously glaring edit issues with the book. One other problem I found was that the author, being so entrenched in the field tends to mention something a while prior to describing it. If you're confused on a topic while reading, continue along, he'll eventually explain.

Another Excellent book by Mr. Maxfield. I had received a copy of his book "The Design Warrior's Guide to FPGAs" at a design seminar, and enjoyed it so much I purchased this one from .com. This book was a joy to read, as Mr. Maxfield has a very clear, conversational writing style that makes his work very readable. I highly recommend this book for anyone starting out in FPGA design, and wish I had read it before going through the pain of having to select an FPGA for use in our hardware. A long, tedious task, which would have been much simpler with access to Mr. Maxfield's insights on the various vendors and their product offerings. After reading the book, I realize that my FPGA vendor selection could have been better. We use PowerPC micro-controllers from AMCC in our products, and should we ever move to an FPGA with an embedded PowerPC core, we'll likely have to shift from our current FPGA vendor to Xilinx, in order to meet our FPGA needs. Since I didn't select Xilinx initially, this will entail tooling up on a different family of FPGA devices and development tools. Not a trivial task. Had I read "FPGAs: Instant Access" before making my selection, it would have allowed me to make a more informed vendor selection for our long term applications.

Already knew much about FPGAs before getting this book. What makes "FPGAs Instant Access" valuable to me is Maxfield's background in both FPGAs and ASICs. ASIC practices and flows are

rarely discussed in FPGA texts. If you are doing an ASIC to FPGA conversion, this is a good book to read.

I have skimmed through the book a few times and have added it to my list of books to read.

Max is the best on writing these kind of books, if you want to learn about FPGA just bought this book.

Clive Maxfield (Max) has created a book that is quite full of information about FPGA technology and development. For an engineer, this is a condensed guide of what the boss needs to know about what you are doing. You may be hard pressed to find what you need in this condensed version of what is likely to be found in two or three books and in manufacturers data sheets, application notes, and by experience doing FPGA design. There is no chapter on FPGA language tutorials, so if you are looking for VHDL, Verilog, or other language tutorials, they are not here. You must get the full size tomes on the languages, and muddle through. Managers, on the other hand, will gain an understanding very rapidly of what their engineering charges are up to. They also will be up to an understanding of why they are approving the multi 10's of thousands of dollars for FPGA development tools. "Dear old dad" would be proud to have this volume, especially if he were a manager. If "dad" is an engineer, your needs will not be found here.

This book was very relevant to my current situation as it has been ten years since I last did an FPGA design and I once again need to look at possibly incorporating an FPGA to enhance the performance of our product range. The issues I am weighing up are: do we use a higher performance DSP, or use a dual-core DSP, or keep the existing DSP but farm out some of the computationally intensive processes to an FPGA, or replace the DSP with an FPGA which contains an embedded processor or two? To this end, I found the book a good overview of the existing state of the FPGA field. Due to the tremendous increase in FPGA size and complexity, it is no longer feasible to use schematic capture and waveform verification as a design philosophy. Incorporating HDL's helped as the designs got bigger (10K to 50K gates!) but now that embedded processors can be incorporated, the simulation environment becomes a lot more complex. Higher level languages and philosophies, like System-C, are needed. The book introduces these concepts but one would need to read further to gain a deeper understanding before choosing a specific direction. I also enjoyed the historical perspective that is interwoven through the book as it helped me identify where

the field was ten years ago, and what has happened since then. This made it easier for me to relate to the new philosophies. I did not learn any practical skills from the book but it did help cement my understanding of the FPGA field in broad terms. If you are a new graduate who has to deliver your first FPGA design, I don't think this book would help you to get the job done. It would help you choose the most appropriate technology for your project, but then this is not usually a decision left to the new entrant. If you are already doing FPGA designs, you are most probably familiar with most of the content of this book. However, the historical perspectives and the summary of the differences between FPGA and ASIC design may be of interest to you. To summarize, the book is a worthwhile read as a broad knowledge is always desirable, especially for management. The style is easy going and pleasant, and the layout is appealing. However, I think the title "FPGAS: An Overview" may be more applicable.

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