



# Integrated Circuit Test Engineering: Modern Techniques

*By Ian A. Grout*

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Using the book and the software provided with it, the reader can build his/her own tester arrangement to investigate key aspects of analog-, digital- and mixed system circuits

Plan of attack based on traditional testing, circuit design and circuit manufacture allows the reader to appreciate a testing regime from the point of view of all the participating interests

Worked examples based on theoretical bookwork, practical experimentation and simulation exercises teach the reader how to test circuits thoroughly and effectively

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## **Editorial Review**

From the Back Cover

Nearly sixty years ago, the first successful demonstration of the transistor proved to be the herald of a new era of microelectronics. The ever-increasing complexity and functional speed of microelectronic circuits now containing tens of millions of transistors demand appropriate and rigorous test engineering activities during development and production. Test engineering must also be more closely interwoven with microelectronic design. An understanding of circuit test engineering is vital to any student desiring a career involving any stage in the design or manufacture of integrated circuits.

Taking a three-pronged approach – dealing with test engineering from traditional-test, design and manufacturing view-points – *Integrated Circuit Test Engineering* encapsulates the subject as it stands today. After an introduction covering background from basic testing rules to trends in technology, the reader learns about:

- fabrication processes;
- a diverse and complete range of detailed tests and procedures calculated to teach you all the tests you will require and how to choose which one(s) to use;
- how to design for testability;
- fault simulation;
- automatic test equipment and
- the economics of testing.

From a practical perspective, the text includes:

- A range of worked examples and exercises together with well-organized references and bibliography to aid further enquiry.
- An introduction to various software such as MATLAB® and Spice explaining their use in testing together with that of IEEE-standard hardware-description languages Verilog®-HDL and VHDL.
- A series of experiments based on material which can be freely downloaded from [springeronline.com](http://springeronline.com) instructing you in the construction of a hardware test arrangement for MS Windows PCs (functionality, schematic and printed-circuit-board layout) with Visual Basic programs to drive the experiments.

*Integrated Circuit Test Engineering* provides a thorough-going and illuminating introduction to test engineering in analogue, digital and mixed-signal integrated circuits. This text is a valuable practical learning tool for advanced undergraduate and graduate electronic engineering students, an excellent teaching resource for their tutors and a useful guide for the practising electronic engineer.

#### About the Author

Doctor Ian Grout is a lecturer within the Department of Electronic and Computer Engineering at the University of Limerick. His research interests include microelectronic circuit design, control systems applications, design for test (digital and mixed-signal), test technology, CAD tool development and interfacing. He currently teaches microelectronic circuit design for electronic engineering students and test engineering for the final year electronic systems and VLSI Masters students. He is also the course leader for the Electronic Systems undergraduate programme within the university.

Doctor Grout has previously held positions with the UK Ministry of Defence and Defence Research Agency. He is currently the chair of the Educational ECAD (Electronic Computer Aided Design) User Group, UK, <http://www.eeug.org.uk>.

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##### **Leticia Cantrell:**

This Integrated Circuit Test Engineering: Modern Techniques book is simply not ordinary book, you have it then the world is in your hands. The benefit you have by reading this book is information inside this reserve incredible fresh, you will get information which is getting deeper an individual read a lot of information you will get. That Integrated Circuit Test Engineering: Modern Techniques without we comprehend teach the one who looking at it become critical in thinking and analyzing. Don't be worry Integrated Circuit Test Engineering: Modern Techniques can bring when you are and not make your handbag space or bookshelves' turn out to be full because you can have it with your lovely laptop even cellphone. This Integrated Circuit Test Engineering: Modern Techniques having fine arrangement in word in addition to layout, so you will not experience uninterested in reading.

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**Jerald Higgins:**

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**Thomas Burke:**

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