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Kiyoo Itoh

VLSI Memory Chip Design



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Vlsi Memory Chip Design

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Vlsi Memory Chip Design:

VLSI Memory Chip Design Kiyoo Itoh, 2013-04-17 The VLSI memory era truly began when the first production of semiconductor memory was announced by IBM and Intel in 1970. The announcement had a profound impact on my research at Hitachi Ltd and I was forced to change fields from magnetic thin film to semiconductor memory. This change was so exceptionally sudden and difficult I felt like a victim of fate. Looking back however I realize how fortunate I was. I have witnessed an unprecedented increase in memory capacity. DRAM for example has had a 6 order increase in the last three decades from the 1 Kb level in 1970 to the 1 Gb level today. I have contributed to this progress with full involvement in memory chip development over my career. Such rapid progress would have been impossible without many of the inventions and innovative technologies and without the effort of many talented people. Unfortunately few systematic books on memory chip design have been written by experts. This is a result of two factors: the difficulty of involving university professors because of rapidly changing technology requiring huge investments and development resources and a shortage of time on the part of chip designers in industry due to severe competition in the memory chip business. Therefore LSI memory chip design has been isolated from the outside preventing a deeper understanding of the technology. This book is based on my 30 year memory chip particularly DRAM design career.

Vlsi Memory Chip Design Itoh, 2006-06-01 [Nanoscale Memory Repair](#) Masashi Horiguchi, Kiyoo Itoh, 2011-01-11 Yield and reliability of memories have degraded with device and voltage scaling in the nano scale era due to ever increasing hard soft errors and device parameter variations. This book systematically describes these yield and reliability issues in terms of mathematics and engineering as well as an array of repair techniques based on the authors long careers in developing memories and low voltage CMOS circuits. [Nanoscale Memory Repair](#) gives a detailed explanation of the various yield models and calculations as well as various practical logic and circuits that are critical for higher yield and reliability.

[VLSI-Design of Non-Volatile Memories](#) Giovanni Campardo, Rino Micheloni, David Novosel, 2005-01-18 [VLSI Design for Non Volatile Memories](#) is intended for electrical engineers and graduate students who want to enter into the integrated circuit design world. Non volatile memories are treated as an example to explain general design concepts. Practical illustrative examples of non volatile memories including flash types are showcased to give insightful examples of the discussed design approaches. A collection of photos is included to make the reader familiar with silicon aspects. Throughout all parts of this book the authors have taken a practical and applications driven point of view providing a comprehensive and easily understood approach to all the concepts discussed. Giovanni Campardo and Rino Micheloni have a solid track record of leading design activities at the STMicroelectronics Flash Division. David Novosel is President and founder of Intelligent Micro Design Inc Pittsburg PA.

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