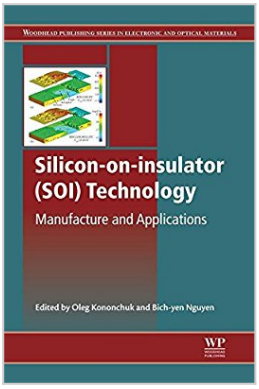

Silicon-On-Insulator (SOI) Technology: Manufacture and Applications (Woodhead Publishing Series in Electronic and Optical Materials)

By O. Kononchuk, B. -Y. Nguyen

Silicon-On-Insulator (SOI) Technology: Manufacture and Applications (Woodhead Publishing Series in Electronic and Optical Materials) By O. Kononchuk, B. -Y. Nguyen

Silicon-On-Insulator (SOI) Technology: Manufacture and Applications covers SOI transistors and circuits, manufacture, and reliability. The book also looks at applications such as memory, power devices, and photonics.

The book is divided into two parts; part one covers SOI materials and manufacture, while part two covers SOI devices and applications. The book begins with chapters that introduce techniques for manufacturing SOI wafer technology, the electrical properties of advanced SOI materials, and modeling short-channel SOI semiconductor transistors. Both partially depleted and fully depleted SOI technologies are considered. Chapters 6 and 7 concern junctionless and fin-on-oxide field effect transistors. The challenges of variability and electrostatic discharge in CMOS devices are also addressed. Part two covers recent and established technologies. These include SOI transistors for radio frequency applications, SOI CMOS circuits for ultralow-power applications, and improving device performance by using 3D integration of SOI integrated circuits. Finally, chapters 13 and 14 consider SOI technology for photonic integrated circuits and for micro-electromechanical systems and nano-electromechanical sensors.

The extensive coverage provided by *Silicon-On-Insulator (SOI) Technology* makes the book a central resource for those working in the semiconductor industry, for circuit design engineers, and for academics. It is also important for electrical engineers in the automotive and consumer electronics sectors.

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- Sales Rank: #2830318 in eBooks
- Published on: 2014-06-19
- Released on: 2014-06-19
- Format: Kindle eBook

Editorial Review

Review

"This book should be a central resource for those working in the semiconductor industry, for circuit design engineers, and for academics, as well as for electrical engineers in the automotive and consumer electronics sectors**."--*Advanced Substrate News,*August 08,2014**

From the Back Cover

Silicon-on-insulator (SOI) is a semiconductor wafer technology that produces higher performing, lower power devices than traditional bulk silicon techniques. It can reduce junction capacitance, resulting in higher speed and lower power consumption. The technology is therefore challenging, and being incorporated into, traditional complementary metal oxide semiconductor technology (CMOS). This important book provides an overview of the developments of SOI CMOS.

The book is divided into two parts; Part I covers SOI materials and manufacture while Part II covers SOI devices and applications. In the first section, chapters introduce techniques for manufacturing SOI wafer technology, the electrical properties of advanced SOI materials and modelling short-channel SOI semiconductor transistors. Both partially depleted and fully depleted SOI technologies are considered. Chapters 6 and 7 concern junctionless and fin-on-oxide field effect transistors. The challenges of variability and electrostatic discharge in CMOS devices are also addressed. In Part II recent and established technologies are covered. These include SOI transistors for radio frequency applications, SOI CMOS circuits for ultralow-power applications and improving device performance by using 3D integration of SOI integrated circuits. Finally, chapters 13 and 14 consider SOI technology for photonic integrated circuits and for micro-electromechanical systems and nano-electromechanical sensors.

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Oleg Kononchuk is a chief scientist at Soitec, France. Bich-yen Nguyen is a senior fellow at Soitec, USA

About the Author
Chief Scientist at Soitec, France

Senior Fellow at Soitec, USA.

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