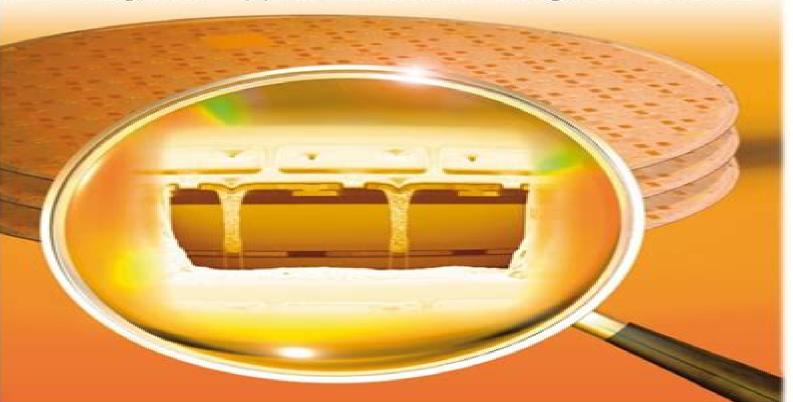
# Handbook of 3D Integration

Volume 1 and 2 Technology and Applications of 3D Integrated Circuits



Brajesh Kumar Kaushik,Vobulapuram Ramesh Kumar,Manoj Kumar Majumder,Arsalan Alam

Handbook of 3D Integration, Volume 1 Philip Garrou, Christopher Bower, Peter Ramm, 2011-09-22 The first encompassing treatise of this new but very important field puts the known physical limitations for classic 2D electronics into perspective with the requirements for further electronics developments and market necessities This two volume handbook presents 3D solutions to the feature density problem addressing all important issues such as wafer processing die bonding packaging technology and thermal aspects It begins with an introductory part which defines necessary goals existing issues and relates 3D integration to the semiconductor roadmap of the industry Before going on to cover processing technology and 3D structure fabrication strategies in detail This is followed by fields of application and a look at the future of 3D integration The contributions come from key players in the field from both academia and industry including such companies as Lincoln Labs Fraunhofer RPI ASET IMEC CEA LETI IBM and Renesas Handbook of 3D Integration, Volume 3 Philip Garrou, Mitsumasa Koyanagi, Peter Ramm, 2014-07-21 Edited by key figures in 3D integration and written by top authors from high tech companies and renowned research institutions this book covers the intricate details of 3D process technology As such the main focus is on silicon via formation bonding and debonding thinning via reveal and backside processing both from a technological and a materials science perspective The last part of the book is concerned with assessing and enhancing the reliability of the 3D integrated devices which is a prerequisite for the large scale implementation of this emerging technology Invaluable reading for materials scientists semiconductor physicists and those working in the semiconductor industry as well Handbook of 3D Integration, Volumes 1 and 2 Philip Garrou, Christopher Bower, Peter as IT and electrical engineers Ramm, 2012-10-22 The first encompassing treatise of this new and very important field puts the known physical limitations for classic 2D microelectronics into perspective with the requirements for further microelectronics developments and market necessities This two volume handbook presents 3D solutions to the feature density problem addressing all important issues such as wafer processing die bonding packaging technology and thermal aspects It begins with an introductory part which defines necessary goals existing issues and relates 3D integration to the semiconductor roadmap of the industry Before going on to cover processing technology and 3D structure fabrication strategies in detail This is followed by fields of application and a look at the future of 3D integration The editors have assembled contributions from key academic and industrial players in the field including Intel Micron IBM Infineon Qimonda NXP Philips Toshiba Semitool EVG Tezzaron Lincoln Labs Fraunhofer RPI IMEC CEA LETI and many others **Handbook of 3D Integration, Volume 4** Paul D. Franzon, Erik Jan Marinissen, Muhannad S. Bakir, 2019-01-25 This fourth volume of the landmark handbook focuses on the design testing and thermal management of 3D integrated circuits both from a technological and materials science perspective Edited and authored by key contributors from top research institutions and high tech companies the first part of the book provides an overview of the latest developments in 3D chip design including challenges and opportunities. The second part focuses on the

test methods used to assess the quality and reliability of the 3D integrated circuits while the third and final part deals with thermal management and advanced cooling technologies and their integration Design of 3D Integrated Circuits and Systems Rohit Sharma, 2018-09-03 Three dimensional 3D integration of microsystems and subsystems has become essential to the future of semiconductor technology development 3D integration requires a greater understanding of several interconnected systems stacked over each other While this vertical growth profoundly increases the system functionality it also exponentially increases the design complexity Design of 3D Integrated Circuits and Systems tackles all aspects of 3D integration including 3D circuit and system design new processes and simulation techniques alternative communication schemes for 3D circuits and systems application of novel materials for 3D systems and the thermal challenges to restrict power dissipation and improve performance of 3D systems Containing contributions from experts in industry as well as academia this authoritative text Illustrates different 3D integration approaches such as die to die die to wafer and wafer to wafer Discusses the use of interposer technology and the role of Through Silicon Vias TSVs Presents the latest improvements in three major fields of thermal management for multiprocessor systems on chip MPSoCs Explores ThruChip Interface TCI NAND flash memory stacking and emerging applications Describes large scale integration testing and state of the art low power testing solutions Complete with experimental results of chip level 3D integration schemes tested at IBM and case studies on advanced complementary metal oxide semiconductor CMOS integration for 3D integrated circuits ICs Design of 3D Integrated Circuits and Systems is a practical reference that not only covers a wealth of design issues encountered in 3D integration but also demonstrates their impact on the efficiency of 3D systems *Processing, Materials, and Integration of* Damascene and 3D Interconnects J. C. Flake, 2010-04 This issue focuses on recent advances in damascene interconnects and 3D interconnects Physical Design for 3D Integrated Circuits Aida Todri-Sanial, Chuan Seng Tan, 2017-12-19 Physical Design for 3D Integrated Circuits reveals how to effectively and optimally design 3D integrated circuits ICs It also analyzes the design tools for 3D circuits while exploiting the benefits of 3D technology The book begins by offering an overview of physical design challenges with respect to conventional 2D circuits and then each chapter delivers an in depth look at a specific physical design topic This comprehensive reference Contains extensive coverage of the physical design of 2 5D 3D ICs and monolithic 3D ICs Supplies state of the art solutions for challenges unique to 3D circuit design Features contributions from renowned experts in their respective fields Physical Design for 3D Integrated Circuits provides a single convenient source of cutting edge information for those pursuing 2 5D 3D technology An Engineer's Guide to Automated Testing of High-Speed Interfaces, Second Edition Jose Moreira, Hubert Werkmann, 2016-04-30 This second edition of An Engineer's Guide to Automated Testing of High Speed Interfaces provides updates to reflect current state of the art high speed digital testing with automated test equipment technology ATE Featuring clear examples this one stop reference covers all critical aspects of automated testing including an introduction to high speed digital basics a discussion of industry

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