Microelectronics Failure Analysis

Desk Reference
Sixth Edition

Edited by
Richard J. Ross

Published by
ASM International®
Materials Park, Ohio 44073-0002
www.asminternational.org

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First printing, October 2011

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ISBN-13: 978-1-61503-725-4
ISBN-10: 1-61503-725-X
SAN: 204-7586

ASM International®
Materials Park, OH 44073-0002
www.asminternational.org

Printed in the United States of America

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Preface to the Sixth Edition

Richard J. Ross, Editor-in-Chief

As the semiconductor industry moves from the "micro" to the "nano" realm, the Failure Analysis community needs to be pro-active in maintaining its ability to verify, isolate, uncover, and identify the root-cause of problems. These problems may be discovered in design debug, product or technology development and qualification, fabrication, packaging, reliability stress, or, most unfortunately, in the field. New materials and ever-shrinking technology dimensions make it increasingly more challenging for the failure analyst and make it increasingly important to provide analysis with information, training, equipment, and materials to enable them to cope with these challenges and opportunities.

For over three decades, this work, "Microelectronics Failure Analysis Desk Reference" has been a key aide to analysts. It has been used as a textbook, a workbook, and a laboratory manual over that time and has undergone, now, six iterations of content selection and revision. The printed version has gone from 275 pages to over 600. Some of the methods and techniques which are included in this edition did not even exist when the first edition was published in the 1970s.

The work itself must change as well to reflect the challenges and opportunities of the times. This edition will exist in web-based online, DVD, and printed form to meet the diverse needs of the community. Some "old favorites" remain as their base technology and practice are still relevant and useful; others have become superseded by the technology. The use of color throughout the work is also introduced in this edition.

No undertaking of this magnitude is accomplished without the efforts of many. The Editorial Board and Section Champions recruited experts in the various specialized fields, nurtured and encouraged them, and drove to a schedule which, in the economic climate of the past few years, required understanding and revision. The staff at ASM International, particularly Kate Russell and Scott Henry were of immeasurable help and support. Thomas Zanon, EDFAS Education Chair, was tolerant, understanding, and supportive when the inevitable frustrations of time and effort appeared. Without the various authors, of course, this work does not exist and I am eternally grateful to each of them. Finally, I want to thank my family for their support for the time spent on the computer and the phone.