

6B.1 Solving Critical Issues in 10nm Technology using Innovative Laser-based Fault Isolation and DFT Diagnosis Techniques by Lesly Endrinal , Rakesh Kinger, Lavakumar Ranganathan, Amit Sheth, Qualcomm Technologies, Inc.

The challenges of completing failure analysis on first silicon for the 10nm technology node are described in this paper by Qualcomm (Endrinal et al.) along with a solution for a particularly difficult, high impact, case. As dimensions shrink the ability of optical probe imaging has become severely resolution limited. Electrical fault isolation becomes more dependent upon DFT (Design For Testability) diagnosis, which also has practical limitations. Here the authors have written new test patterns, overcoming the limitations in imaging resolution and diagnosis, to provide clear fault isolation. Their innovative problem solving ultimately led to an image of the defect and clear direction for process improvement.