World Academy of Science, Engineering and Technology
International Journal of Industrial and Manufacturing Engineering
Vol:15, No:03, 2021

Failure Localization of Bipolar Integrated Circuits by Implementing Active Voltage Contrast

Authors : Yiqiang Ni, Xuanlong Chen, Enliang Li, Linting Zheng, Shizheng Yang

Abstract : Bipolar ICs are playing an important role in military applications, mainly used in logic gates, such as inverter and NAND gate. The defect of metal break located on the step is one of the main failure mechanisms of bipolar ICs, resulting in open-circuit or functional failure. In this situation, general failure localization methods like optical beam-induced resistance change (OBIRCH) and photon emission microscopy (PEM) might not be fully effective. However, active voltage contrast (AVC) can be used as a voltage probe, which may pinpoint the incorrect potential and thus locate the failure position. Two case studies will be present in this paper on how to implement AVC for failure localization, and the detailed failure mechanism will be discussed.

Keywords : bipolar IC, failure localization, metal break, open failure, voltage contrast
Conference Title : ICEPT 2021 : International Conference on Electronic Packaging Technologies
Conference Location : Dubai, United Arab Emirates
Conference Dates : March 22-23, 2021

Open Science Index, Industrial and Manufacturing Engineering Vol:15, No:03, 2021 publications.waset.org/abstracts/132527/pdf