

EXCHANGE PAPER  
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## **Scanning Magnetoresistive Microscopy for Die-Level Sub-Micron Current Density Mapping**

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### Abstract

In this paper, we will present a new technique for fault isolation and failure analysis in integrated circuits based on a scanning magnetoresistive imaging system. By detecting the stray magnetic fields at the surface of a chip using magnetic sensors with sub-micron spatial resolution, we are able to obtain a full map of in-plane current densities, resolving features smaller than 100 nanometers. We will briefly discuss the capabilities and limitations of the technique and will present results on a variety of frontside and backside samples.