



(12) **United States Patent**  
**Colvin**

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(54) **SYSTEM AND METHOD FOR GRADIENT THERMAL ANALYSIS BY INDUCED STIMULUS**

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See application file for complete search history.

(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 5 days.

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(21) Appl. No.: **14/310,137**

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(65) **Prior Publication Data**

7,323,888 B1 \* 1/2008 Colvin ..... G01R 31/308 250/310

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**Related U.S. Application Data**

(62) Division of application No. 12/945,284, filed on Nov. 12, 2010, now Pat. No. 8,797,052.

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(57) **ABSTRACT**

(51) **Int. Cl.**  
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A thermal gradient is induced in a device-under-test (DUT) and used to determine the location of a defect. In one embodiment, a static thermal gradient is induced across at least a portion of the DUT along a first axis. The thermal gradient is incrementally walked along the first axis until the condition associated with the defect is triggered, thereby defining a first region. The thermal gradient is then induced along a second axis of the DUT and the process is repeated to define a second region. The location of the defect is determined to be the intersection of the first region with the second region.

(52) **U.S. Cl.**  
CPC ..... **G01R 31/00** (2013.01); **G01R 31/287** (2013.01)

(58) **Field of Classification Search**  
CPC ..... H01L 2924/351; G01N 15/1434; G01N 15/147; G01N 15/1484; G01N 21/532; G01K 13/002; G01R 1/44; G01R 31/2898;

**13 Claims, 6 Drawing Sheets**

