PDF/SOLUTIONS™

DFI® System

Detect the Undetectable

Overview

Semiconductor 3D structures can include buried defects that are difficult to detect, resulting in low-level leakages and variations that can lead to significant variability in interconnect resistance and transistor performance, leading to months of extra design cycle time.

Our Design-for-Inspection™ or DFI™ System, is a contactless e-beam measurement system that can find these problems by detecting electrically relevant defects buried inside of 3D structures fast enough to be used inline during middle of line semiconductor manufacturing and accelerate your time to market by 4-6 months.

Early Visibility into Potential Reliability Risks

The DFI System is a combination of patented IP cells that are inserted into a design, and specialized, high-performance e-beam hardware that reads the electrical response of those IP cells.

Together, they can help identify process and layout sensitivities that limit yield, performance, and reliability to provide foresight into design issues that normally cannot be seen or measured until months later and result in costly design respins and delayed time-to-market.

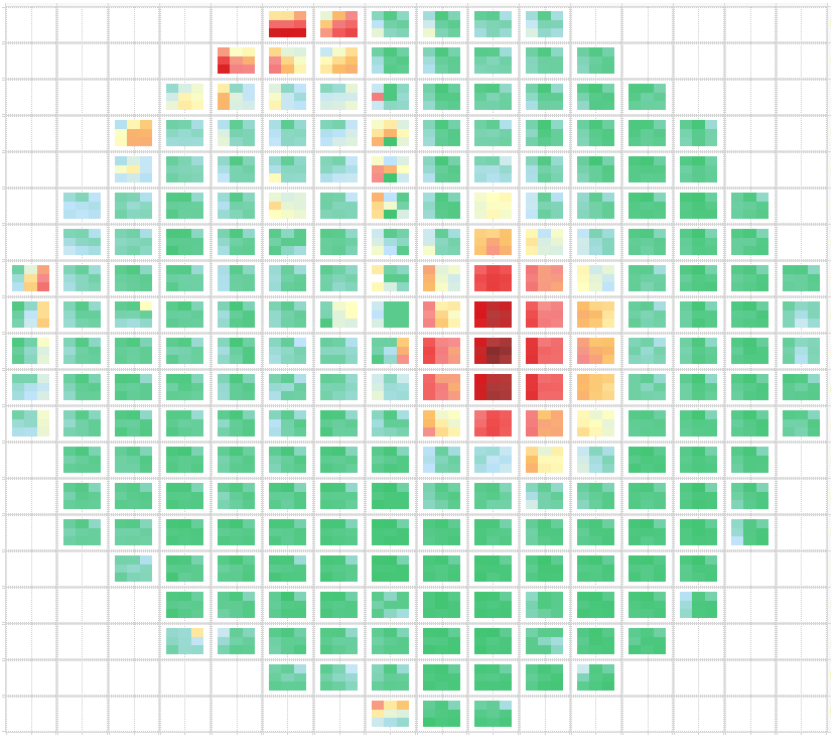
Our patented IP cells are read in middle-of-line manufacturing by our contactless e-beam test measurement systems, the eProbe® 150 and 250. Both systems are in active use for yield learning at multiple nodes (22nm, 14nm, 7nm and 5nm), with performance in excess of 100 million DUTs per hour (eProbe 250)

Product Highlights

- Ultra-high performance e-beam and IP cell system that Identifies electrically-relevant defects buried in 3D structures
- Accelerates time-to-market by 4-6 months
- 100+ tapeouts from 28nm to 5nm
- Early visibility into potential reliability issues
- 100M+ DUTs per hour performance

Design-for-Inspection® System

Unique Reliability Insights



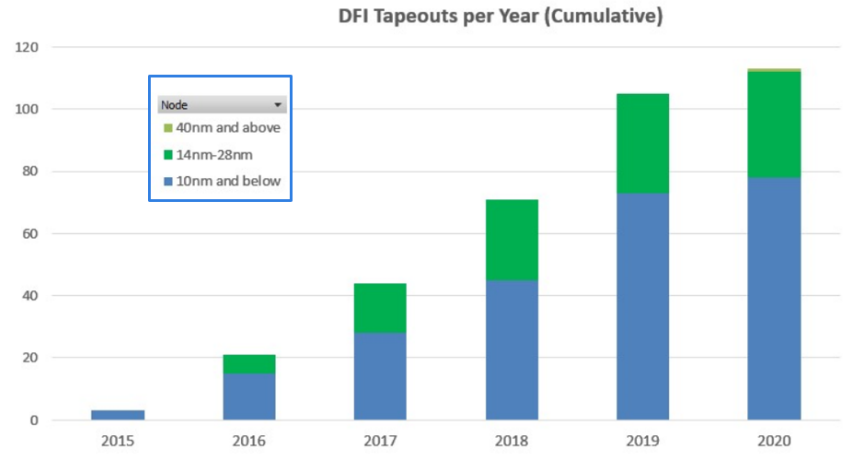
The DFI System efficiently scans billions of structures per wafer to identify tiny leakages at PPM to PPB levels and provide unique reliability insights into latent weak spots in a die. This detailed across-die measurement enables better risk screening per die than gross methods such as GDBN (Good Die Bad Neighborhood)

The Need for DFI

- **Increasing interconnect resistance in advanced process nodes**
- **Large die and heterogeneous integration**
- **Capture impact of integration (e.g. non -visible defects and buried failures)**
- **Diverse failure modes and failure resolution**
- **Observability of failures with high detectability and localization**

For more information about the DFI System, contact your local PDF sales representative

Production Proven



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