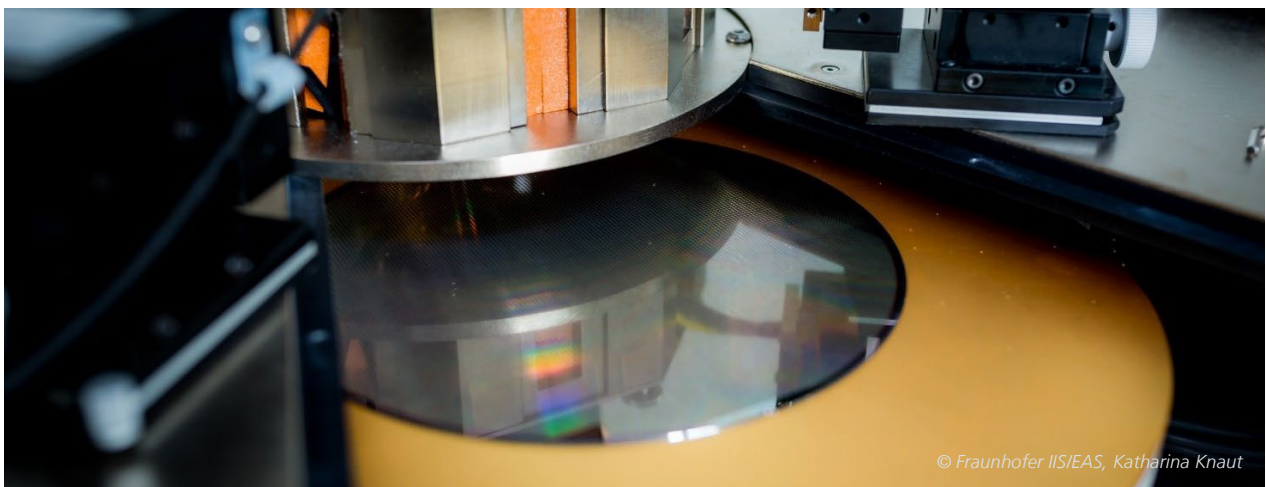


FRAUNHOFER INSTITUTE FOR INTEGRATED CIRCUITS IIS  
DIVISION ENGINEERING OF ADAPTIVE SYSTEMS EAS

# WAFER LEVEL CHARACTERIZATION WITH SPECIAL EMPHASIS ON RELIABILITY



The long-term behavior of semiconductor technologies as well as integrated devices and circuits is a key criterion for their utilization in safety-critical or long-lived applications. Electrical measurements on wafer level are required to investigate the impact of different wear-out mechanisms. Fraunhofer IIS/EAS is offering corresponding characterization services. With a particular focus on semiconductor reliability, we support our partners in rapidly evaluating the impacts of adaptations in device architectures and manufacturing processes.

## **Our Services:**

- Consulting on qualification plans and preparation of test concepts
- Implementation and conduction of standard and custom measurements
- Data acquisition and analysis including statistics and lifetime evaluation
- Derivation and calibration of simulation models, especially for transistor degradation

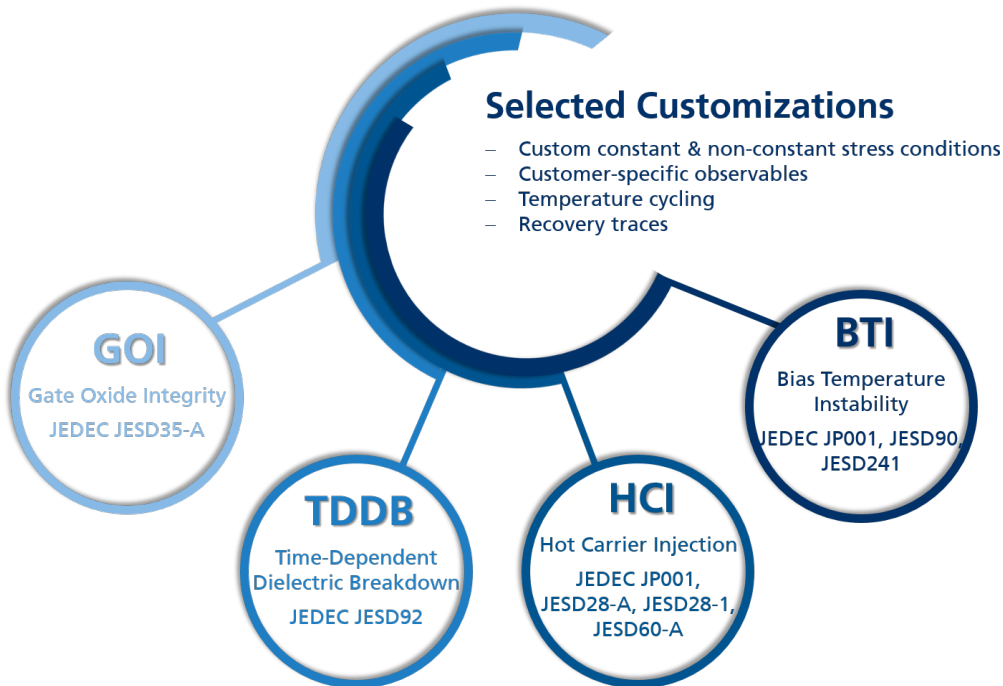
## **Customer Benefits:**

- Technology qualification according to industry standards, especially JEDEC, and customer-specific guidelines
- Adherence to application-related standards, such as AEC-Q100 (test group D)
- Detailed assessment of semiconductor technology according to customer requirements

### Technical Data:

- Measurements on wafers (up to 12") and single dies (2x2 mm<sup>2</sup> to 10x10 mm<sup>2</sup>)
- Standard and custom measurements:
  - Transistor characterization with DC, C-V and pulsed I-V measurements
  - Wafer level reliability measurements including fast BTI
- Industry-standard measurement equipment
  - 1 A @ 210 V, 120 mA @ 1 kV, 20 mA @ 3 kV
  - DC to 110 GHz
- Temperature: -40 °C to 300 °C including temperature cycles

### Selected Measurements:



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