Fraunhofer IZM

Interdigital Finger-Type Capacitors

Copper/ Polymer Evaluation Kit

The evaluation kit is best suited for the following applications

1. Rapid polymer evaluation
2. Coating evaluation over Cu-features
3. Cu-ion migration evaluation
4. Cu-oxide growing under stress
5. Interface failure under stress

New packaging concepts call for innovative polymers to be used for the redistribution layers on wafers and panels. Before such novel materials can make their way into end products, however, they need to prove their reliability in stringent stress tests. The biased testing of thin film polymers is particularly challenging due to parasitic failures caused by the test setting and the lack of qualified test substrates.

Test samples for evaluating thin film polymers, courtesy of Fraunhofer IZM.

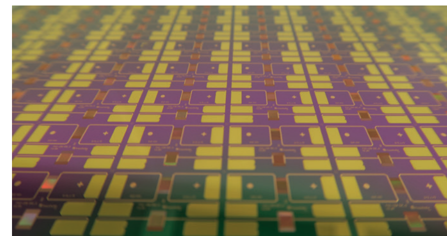
The kit facilitates testing with its pre-applied copper line features and solderable contact pads, which are stable enough even for very harsh material tests. After depositing the polymer and contacting the pads, the device is ready for testing. No additional RDL processing is needed, which allows minimal-effort testing and makes this kit especially suitable for polymer suppliers, RDL service providers, and system builders.

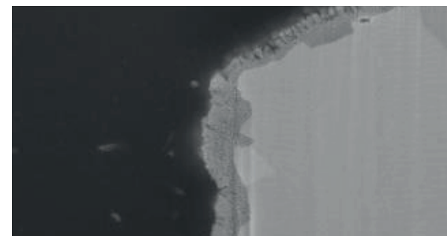
Test features for passivation characterization include:

- Lines and spaces of 5 µm in an area of 5 mm x 3 mm and 5 mm x 2 mm
- 5 µm copper lines (SAP)
- Ready-to-use samples with already deposited solder pads – stable interfaces for biased HAST and biased HTS
- Large solder pads for prober or wire soldering connection
- Delivered as a 200 mm wafer or single die including a .gds file for the pad passivation openings for in-house evaluation (on demand)

The test service can be combined with Fraunhofer IZM's polymer evaluation bundle to include:

- Polymer processing
- bHAST or bHTS evaluation
- Cross-section and FIB analyzing





Top: Top view of the test device
Bottom: FIB cross-section of copper oxide growing at the polymer-to-copper interface after biased HAST

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