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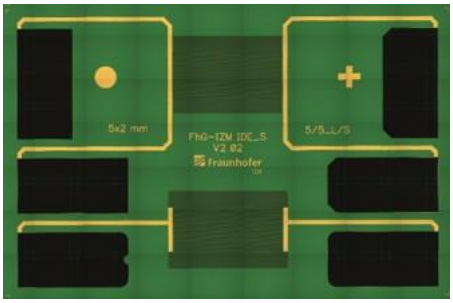

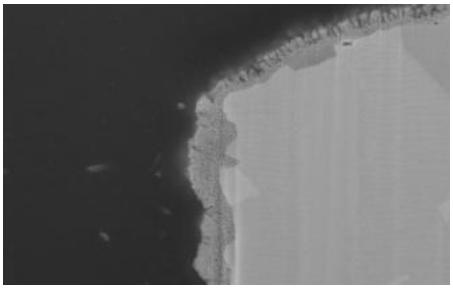

Top: Top view of the test device.
Bottom: FIB cross-section of copper oxide growing at the polymer-to-copper interface after biased HAST

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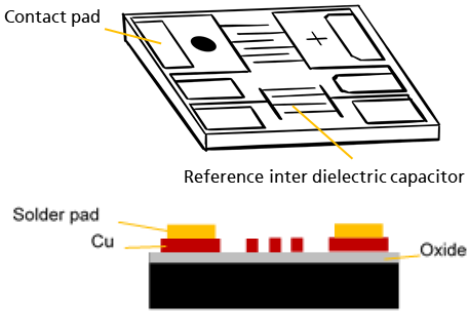
COPPER / POLYMER EVALUATION KIT (INTERDIGITAL FINGER-TYPE CAPACITORS)

New packaging concepts call for innovative polymers to be used for the redistribution layers on wafers and panels, but before such novel materials can make their way into end products, 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 IZM.

The kit facilitates testing with its pre-applied copper line features and solderable contact pads, which are stable enough for even 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.



Build-up of copper

Test features for passivation characterization including:

- Lines and spaces of 5 µm in an area of 5 mm x 3 mm and 5mm 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 analysing

The evaluation kit is best suited for the following applications:

- Rapid polymer evaluation
- Coating evaluation over Cu-features
- Cu-ion migration evaluation
- Cu-oxide growing under stress
- Interface failure under stress

Forschungsfabrik Mikroelektronik Deutschland

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