

Cu Wire Evaluation

Integra has participated in various industry studies for Cu wire evaluation using different flows and inspection methodologies.

Failure Mode analysis and understanding of physics of failures with copper bond wire PEMs.

Integra's analysis include:

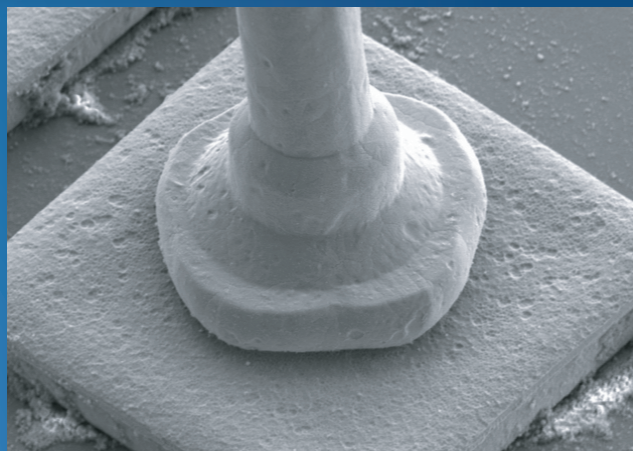
- Cu bond wire specific DPAs
- Understanding of pad to copper bond wire IMC characterization
- Specific concerns of delamination of cu bond PEMs
- Evaluation of hidden micro-crack damages
- Issues with corrosion and molding compound
- Full bond pull and bond shear characterization

Integra offers a unique room ambient decapsulation process to minimize over-etching Cu wire damage during plastic etching process. The process includes the capability to etch and maintain complete integrity down to the ball attachment. Once the ball attachment is analyzed our process is capable of removing the ball attachment from the pad without destroying the metalized pad.

Evaluation process flow includes control sample verification before actual sample decapsulation.

Quality testing provided for Cu wire evaluation:

- Historical data comparison
- Ball diameter: detailed inspections per MIL-STD-883, M2010, condition A for Microcircuits and Hybrids and M2074 for Discrete devices
- Bond pull: MIL-STD-883, M2011 for Microcircuits and Hybrids and M2037 for Discrete semiconductors.
- IMC inspection using SEM per MIL-STD-883, M2010, condition A for Microcircuits and Hybrids and M2074 for Discrete devices



Extensive in-house reliability evaluation capability for Cu wire:

- Life test to study Cu wire wear out mechanisms
- Humidity tests with pre-conditioning
- Temp cycle
- High temp storage life
- Mechanical stresses
- Manufacturing process evaluation
- Extensive experience with laser ablation decapsulation process

In-House Equipment Includes:

- High resolution cameras
- Decapsulation stations
- Acoustic microscopes
- X-Ray
- Laser ablation decapsulation equipment
- SEM with EDX
- Cross sectioning equipment
- Vacuum bake
- Bond pull and bond shear equipment including precision gauges
- Reliability equipment for life test, high temp storage life, THB, HAST, temp cycle and vacuum bake

Comprehensive reports with detailed photographs and data analysis.



**Celebrating Over 35 Years of Providing
High Quality Semiconductor Services**

**www.integra-tech.com
1-800-622-2382**