NINETEENTH ANNUAL

BiTS

Burn-in & Test Strategies Workshop

March 4 - 7, 2018

Hilton Phoenix / Mesa Hotel
Mesa, Arizona

Archive

COPYRIGHT NOTICE

www.bitsworkshop.org

BiTS Contactor Life Cycle Panel Session

James Migliaccio
Qorvo

BiTS Workshop March 4 - 7, 2018

Qorvo

Formed from the merger of TriQuint Semiconductor and RF Micro Devices →January 2015

We test a broad portfolio of RF devices: from low volume custom products to high volume general market devices at package and die level

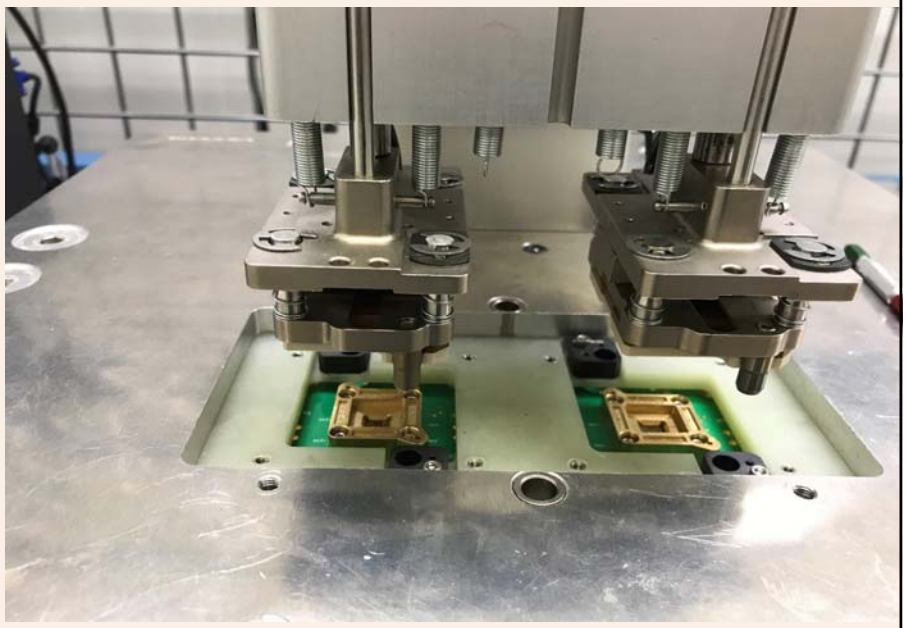
Correspondingly need a variety of contactor solutions to satisfy divergent families of products with different needs

End of Useful Life Requirements

- Yield (electrical) or # of cycles (planned mechanical)
  - Poor performance (low yield), customized by product as each device is unique
  - Contact Performance Maintence System (CPMS) used to set standard maintenance and replacement intervals based on similar products initially
  - Factory adjusts intervals based on testing
- Typically will run a contact to failure (fatigue) if possible
  - Replace all pins at once
  - Do not mix new and old contacts in same socket

Socket Evaluation Methodology

- Life Tester
  - Socket designed around product
  - Uses handler plunge assembly to cycle devices
  - Socket mounted on test fixture
- Process
  - Plunge actual devices, mimic test time
  - Periodic read points to inspect/measure
- Other
  - Use force gauge to determine displacement versus normal force to get average normal force per pin



Purpose of Internal Data

- Our data is to estimate the expected life of a socket/contact as used in production setting
- Use data to set cleaning and replacement intervals (CPMS)
- Use actual devices rather than surrogates to determine wear rate of contacts and damage to pads
- Observe changes in contact surface (plating), shape (wear), and damage

IDM Standards

- What are the major influences on socket life?
  - Real world use → contamination, temp, current
- How should life cycle be defined across the industry?
  - Change in contact resistance is basically a default standard (20%?)
  - Measured at nominal current and max current along with defined duty cycle and recommended/max stroke
  - Common surrogate device design
  - Need a significant sample to determine population