NINETEENTH ANNUAL

BiTS

Burn-in & Test Strategies Workshop

March 4 - 7, 2018

Hilton Phoenix / Mesa Hotel
Mesa, Arizona

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Life Cycles of Sockets; Specification vs Reality and Setting Standards

Texas Instruments
James Tong

BiTS Workshop
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TI Contactor Strategy

Pass/Fail Criteria: ≥ Life of **1M insertions**,1 pins for **all pitch** by **package type**

Electrical

- Mis-contact reliability
  - DC (Open/Shorts) –
    - First Pass conti%
    - Yield recovery from Conti test
- Frist Pass yield
  - Func-Parametrics
    - RF or speed related test

Others

- Temperature performance

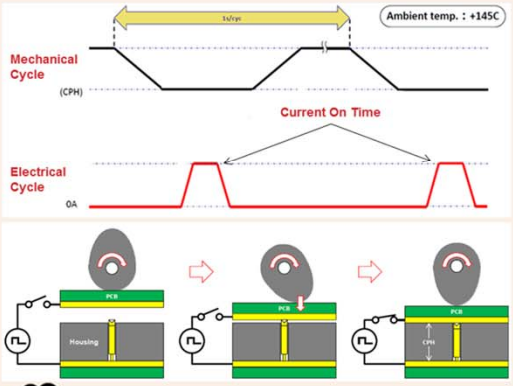
Mechanical

- Force? – Do we care if it performs the test
- Tip wear? – Do we care if it does not affects the yield (electrical and mechanical)
- Package witness marks – No physical damage to DUT pad or ball
- Alignment features - alignment of contact affecting potential VM rejects/electrical performance

Pin life performance base on actual production evaluation data along with typical production variables

Supplier Socket Self-Evaluation Methodology

- Equipment for **METS Test**
  - Standard contactor vendor test equipment
    - FReD tester, Contactor cycler, Power suppliers, offline measurement tools, Infrared camera, network analyzer and contactor checker or OQC tools
  - Tester/Handler with actual devices



Emulating test application as best as possible

- Pin specification
- Cost → Pin and contactor
- METS test
- 1M Cres test at temp
- Mechanical test: scrub wear test, Cu expose test

Vendor Self Qualification

Prototype Checkout

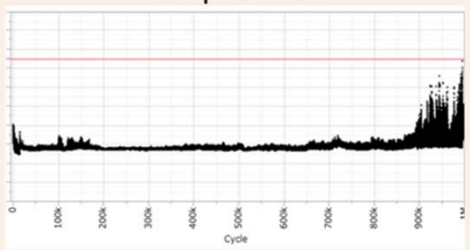
- Build prototype contactor/s for engineering evaluation
- Prove RF/Speed characteristic of solution
- Small sample run to reduce risk at production qualification phase

- Multiple samples of contactor to prove lifetime (Cres) and other spec envelop →Temperature, Current, Speed/RF test performance
- Maintenance learning

Production Qualification

Test result under 145°C

Test result under room temperature



Santa's List

- The "Not-Me-Too" Supplier

  Product distinction

  – Cres stability
    - Pin structure design, Plunger material and hardness, Spring material and characteristic
  – Temperature, current, plating of plunger and barrel if applicable

  Support distinction

  – Application support from supplier
    - Hot switching, Residual electrical charge handling, Current load sharing and distribution
- Standardization
  – Current carrying capability using METS
  – Insertions life expectancy base on test application
  – Compress pin height
  – Common test guide line of specifying solution for high speed broadband and/or RF test needs