

NINETEENTH ANNUAL

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Life Cycles of Sockets; Specification vs Reality and Setting Standards

Yoinjun Shi Twinsolution



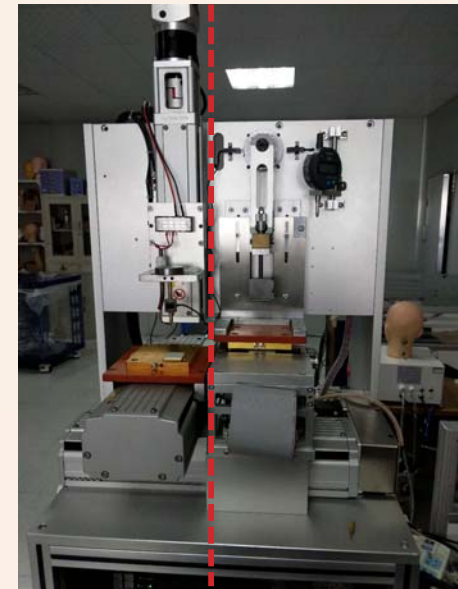
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Life Cycle Test Methodology

- Equipment
 - Custom fixture design
 - 32 pins~96 pins for life test
 - 36pins ~ 2000pins for F/Res test
 - Cam mechanism for life cycling
 - Customize Force/Measurement unit
 - Flexible to control the current density
 - Contact medium
 - Top plate silver-Life Testing
 - Top Plate BeCu/Gold plating-FDR
 - Bottom plate BeCu/Gold plating

F/Res Vs. Displacement Measurement



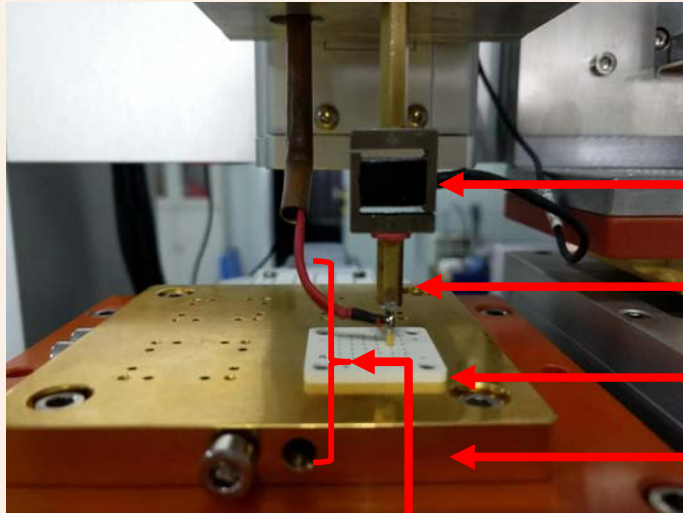
Res Vs. Life Measurement

Spring Probe Life Testing

2

Life Cycle Test Methodology-Continue

F/Res Vs. Displacement Measurement Unit



Compress force measurement unit (500gf)

Top Contact Plate

Customize Fixture

Bottom Contact Plate

Res(Force/Measurement Unit)

Key Parameters/Assumption

- Why was this method chosen
 - Contact method is more life the IC ATE testing, it's a steadily contact, no movement after the handler compressed.
 - Silver and gold plated plate provide a good contact for top plunger and bottom plunger tip, to minimize the impact of contact point impact.
 - CAM design more precise compare with cylinder piston, comparable wear acceleration with handler.
 - CAM design is also easy to control the running speed of the life testing.
- What defines End of Life in your method?
 - 5% over 200mOhms
 - Average Spec
 - Average + 2Std Spec
- Variables captured
 - Room Temperature
 - Normal Test 30mA/Customer Request maximum 1A.

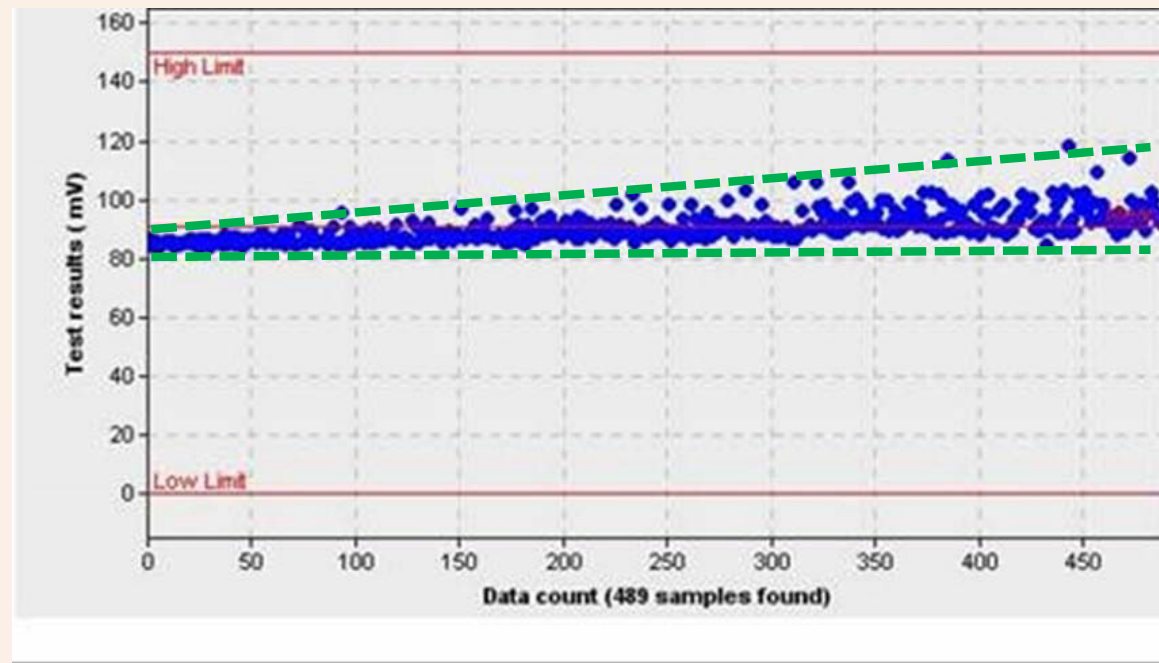
Example Data Internal vs. External

- IDM Data-Example3 (Switch Voltage)

Test Type: Parametric
Low L. 0mV
High L. 152mV

Mean: 91mV
Min: 84mV
Max: 119mV

Samples:500



Supplier Standards

- How should life cycle be defined across the industry?
 - Res/Contact force
 - Top plate material normally is solder or matt tin, which is quite different from device, and this play a big role of life span.
 - Current density and on time is also another important factor to impact the life span of pin.
 - Sampling data of measurement is good enough to test the life span, we do not have to measure the pin by each cycle.