

HAWK

A Hybrid Probe Card

Phill Mai, JEM America Corp. (Presenter)

Shin Kozaki, JEM Japan

Teru Sakata, JEM Japan

Kaz Okubo, JEM America Corp.

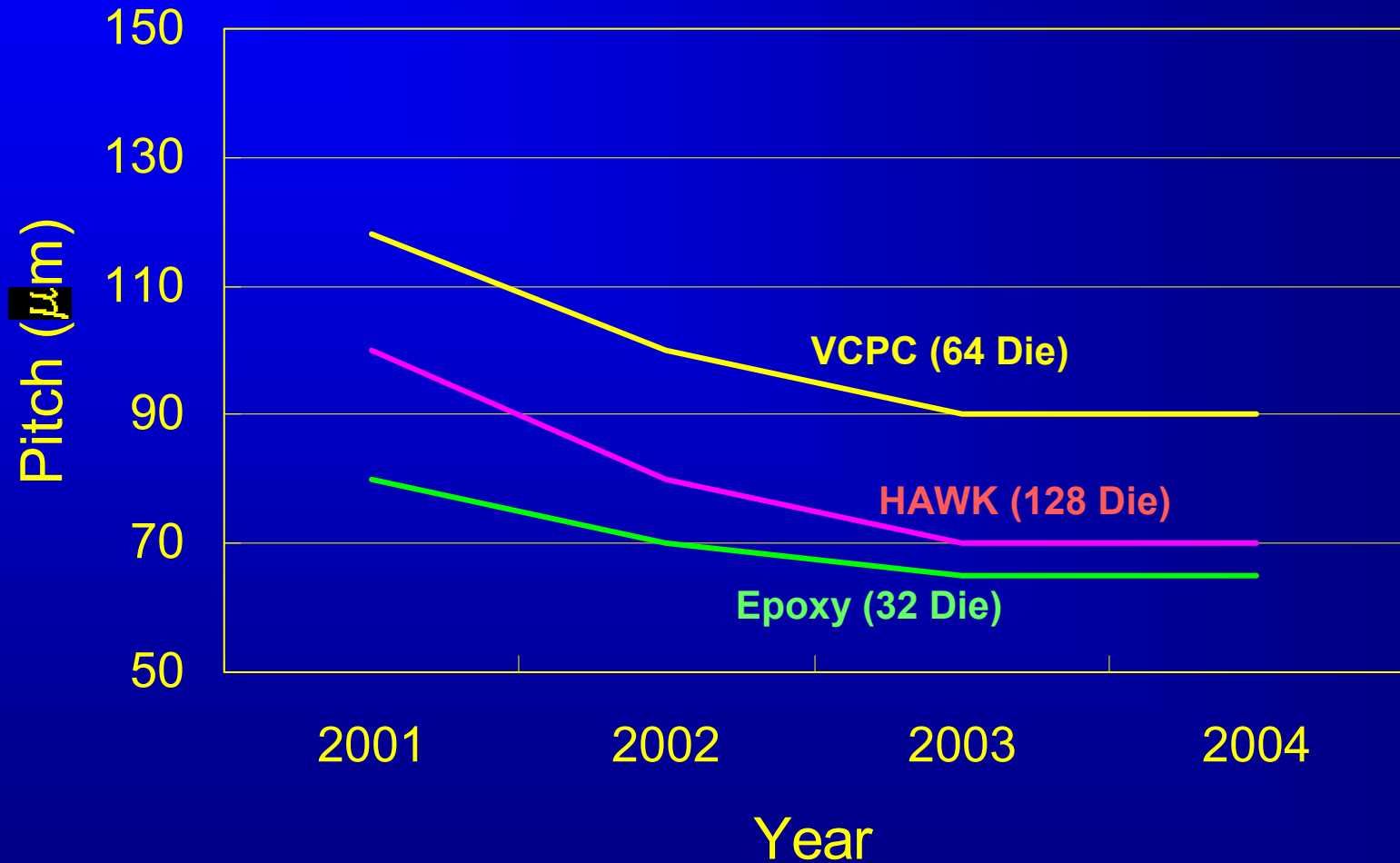
Outline

- Roadmap
- HAWK Concept
- Electrical and Mechanical Data
- Maintenance
- Specifications
- Summary

JEM Technology Overview

	Memory	Fine Pitch	Area Array	HF 1-10 GHz	Para-metric	Wafer-level burn-in
Epoxy						
VSCC						
HAWK						
VCPC						
Coax Probe						

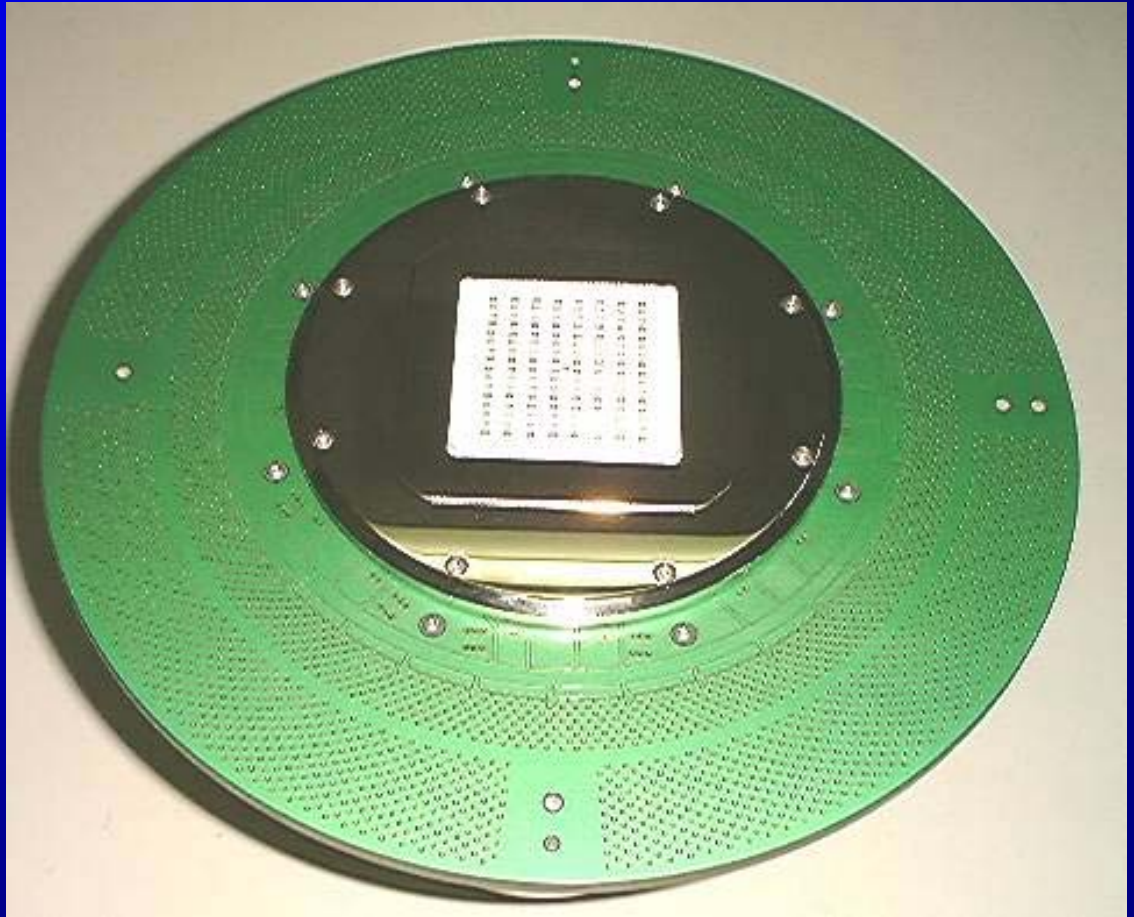
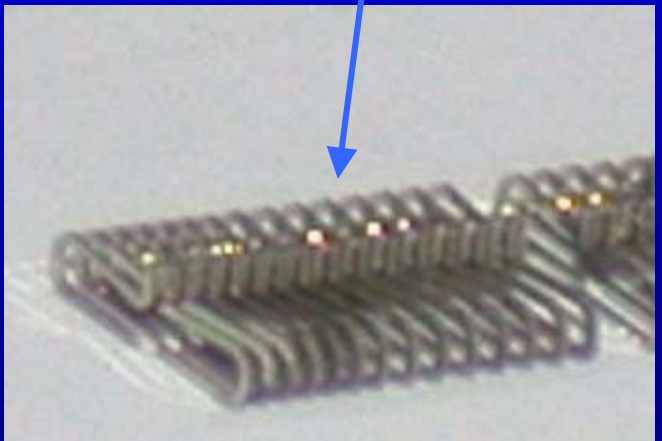
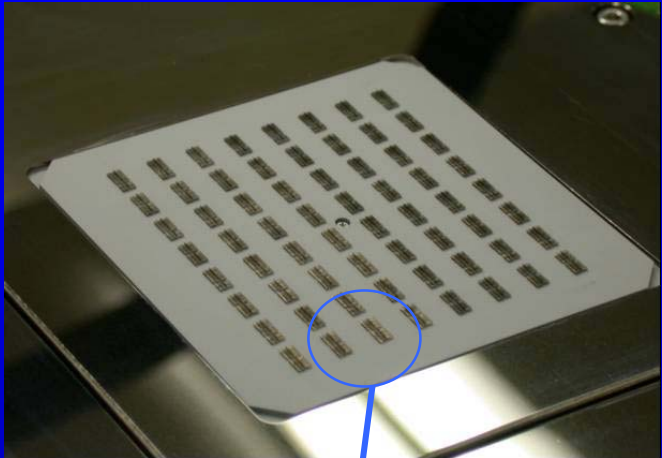
Pitch Roadmap



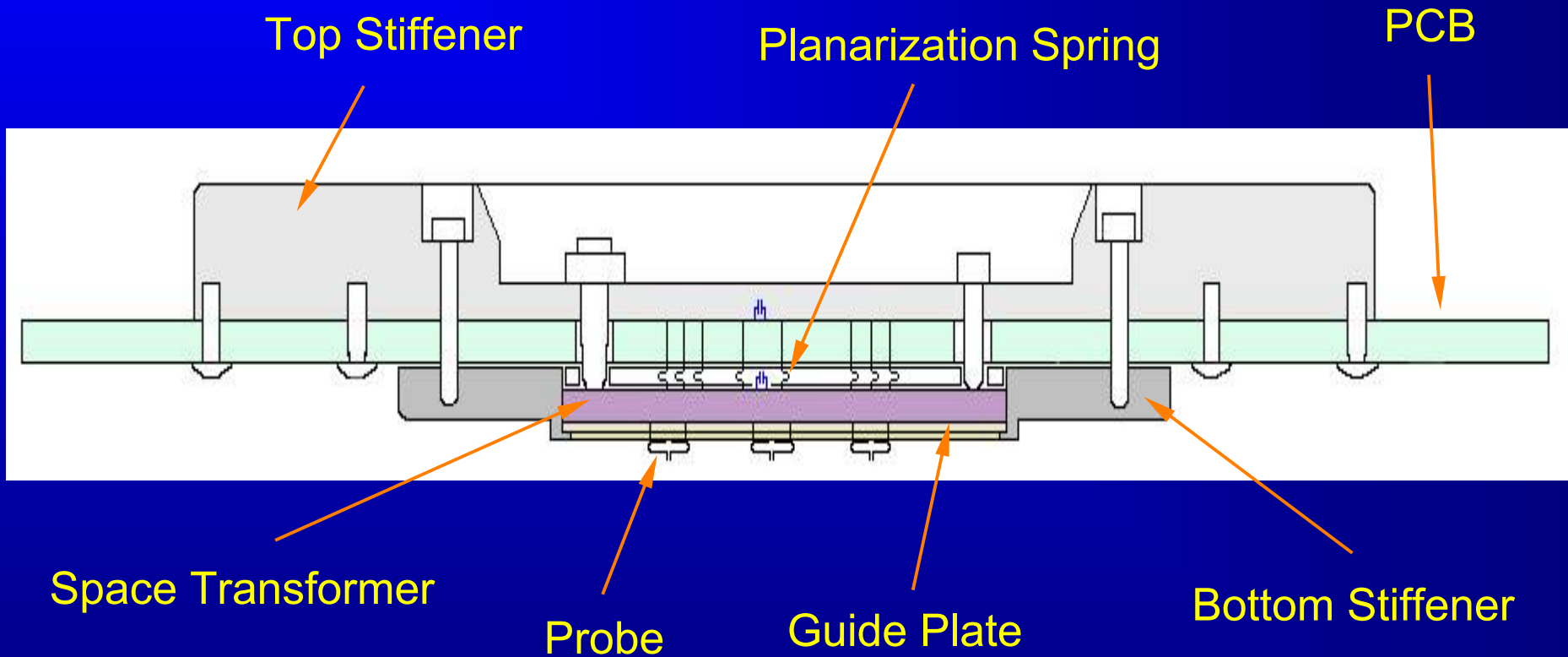
Why HAWK?

- Smaller pitch
- Lower probe force
- Individually-replaceable probes
- Improved DUT layout flexibility
- Fewer cleanings
- Higher bandwidth

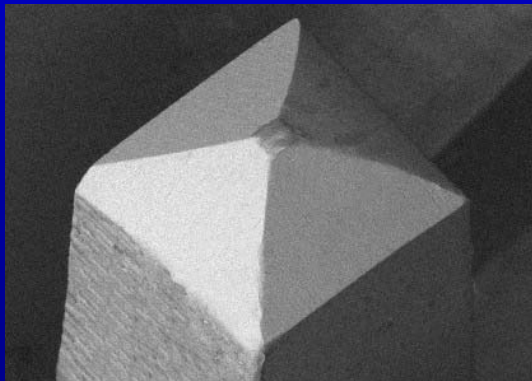
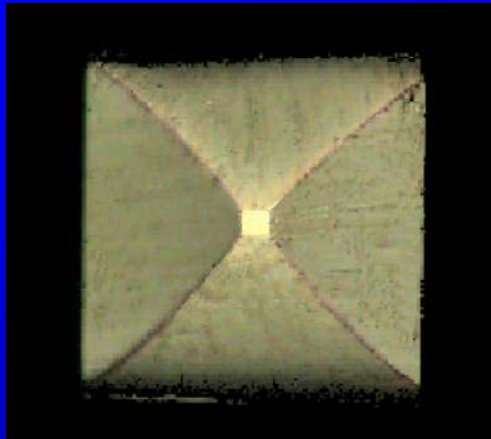
HAWK



Structure

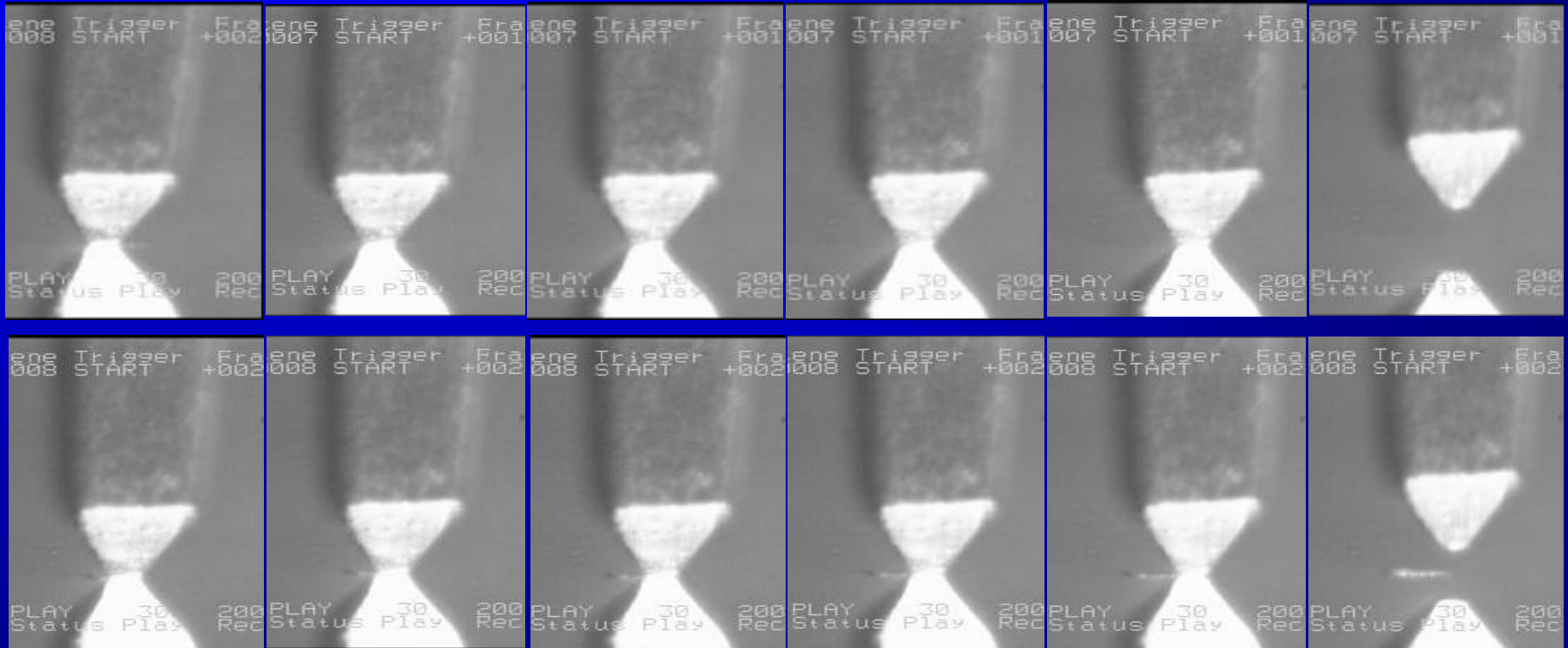


HAWK Probe

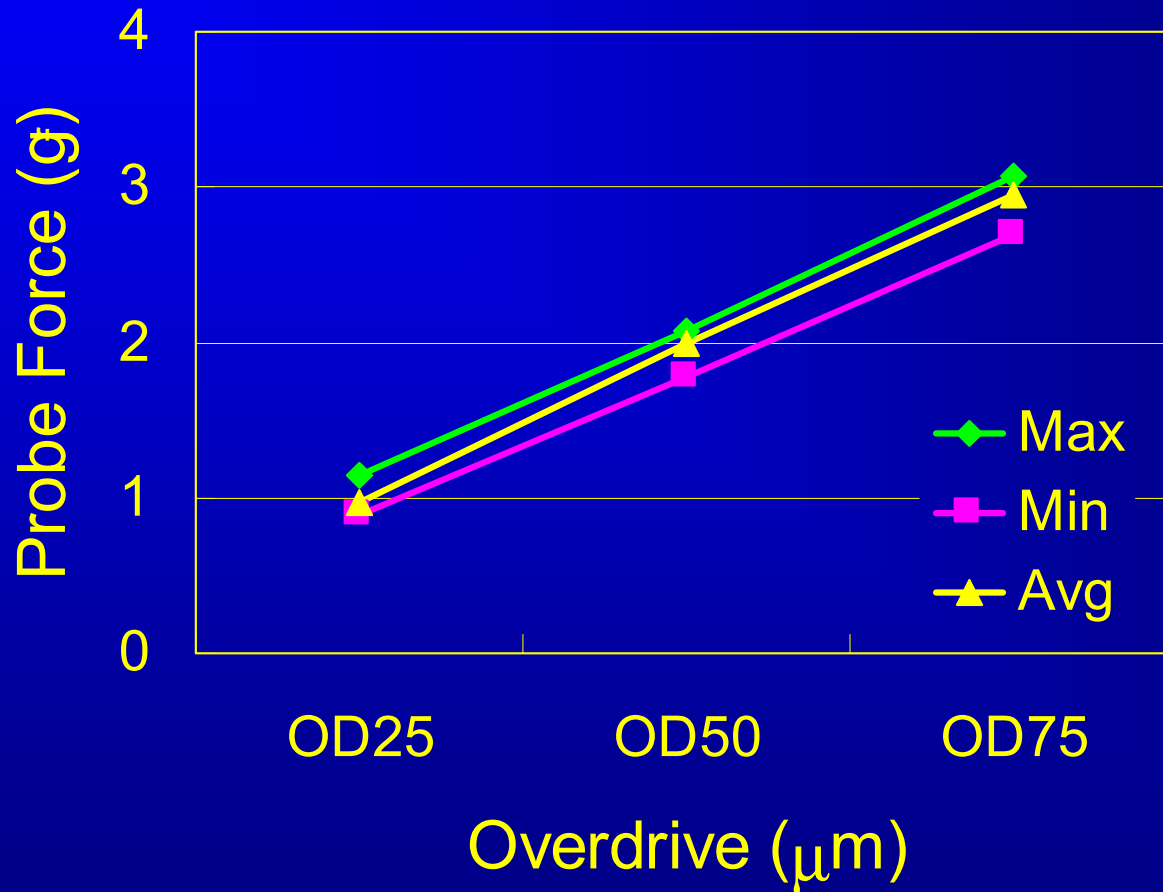


└ 10 um

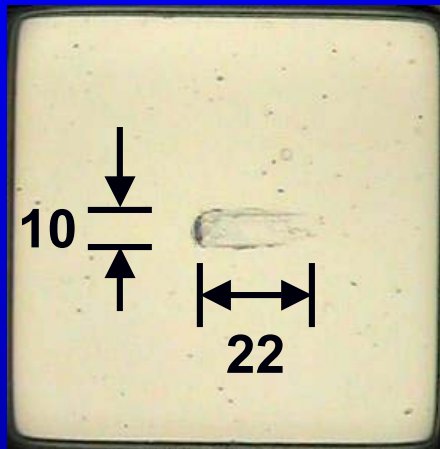
Contact Mechanism



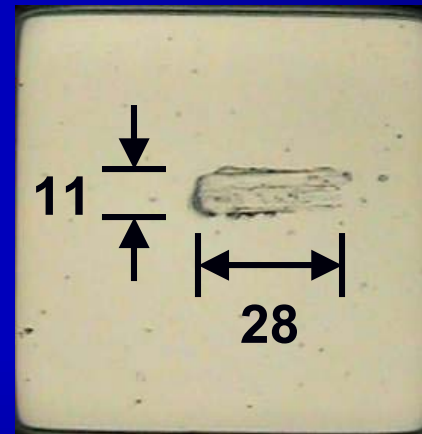
Probe Force



Scrub Mark

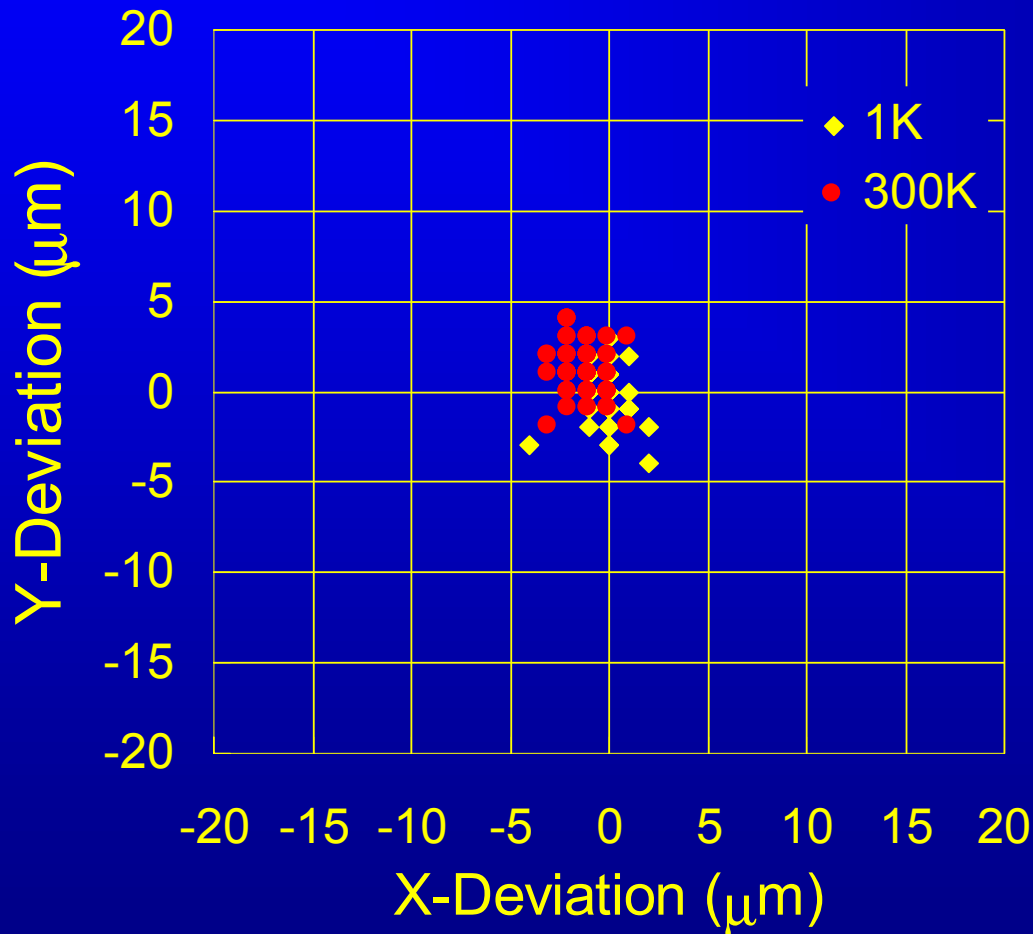


50 μm OD



70 μm OD

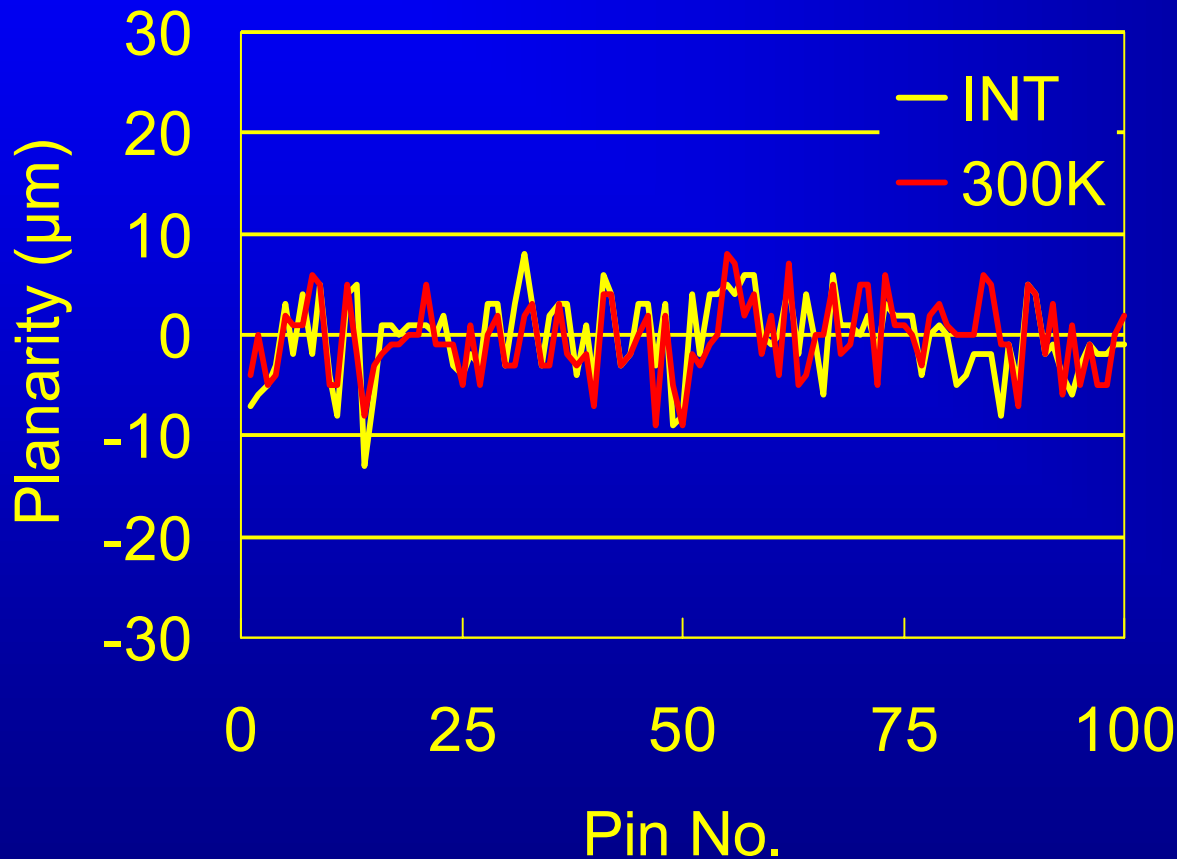
Alignment



TEST CONDITIONS

Temp : 100°C
OD : 70 μm
Load : 50mA; 10 ms
Pad : Al-Cu

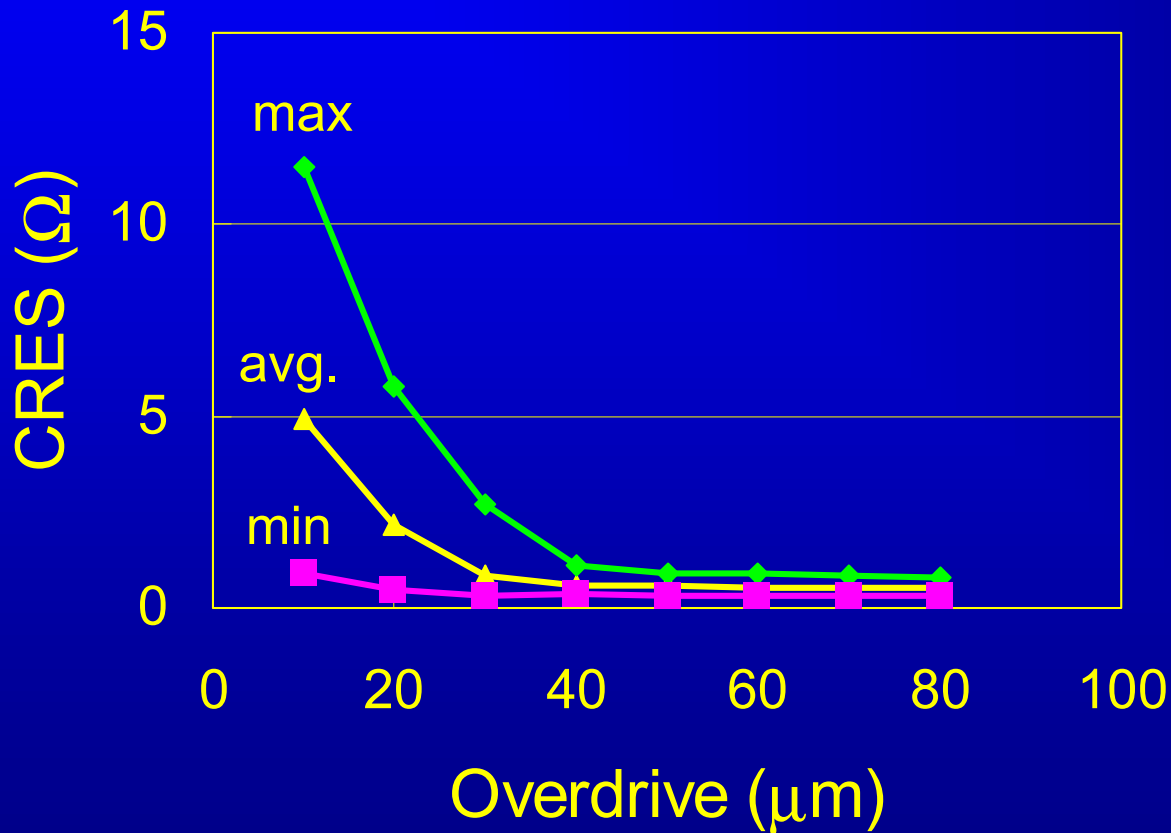
Planarity



TEST CONDITIONS

Temp : 100°C
OD : 70 µm
Load : 50mA; 10 ms
Pad : Al-Cu

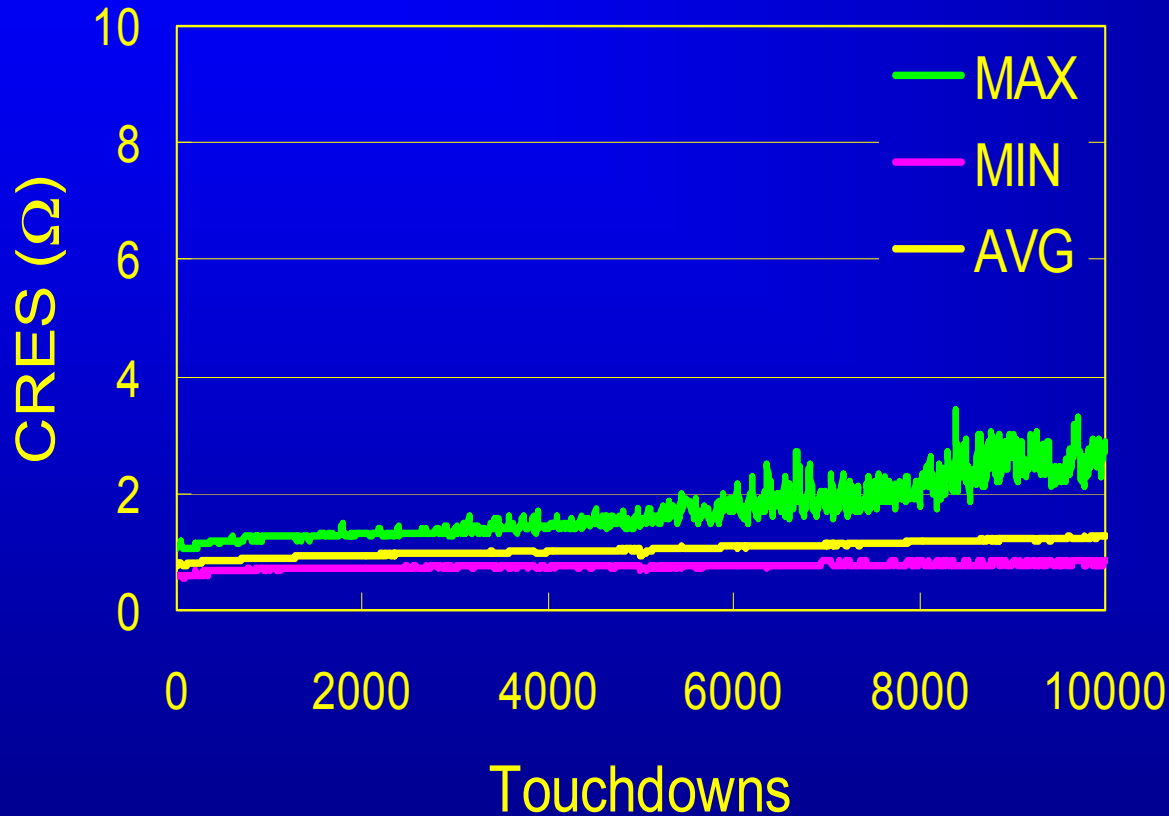
CRES vs. Overdrive



TEST CONDITIONS

Temp : 100°C
OD : 10 - 80 μm
Load : 50mA; 10 ms
Pad : Al-Cu

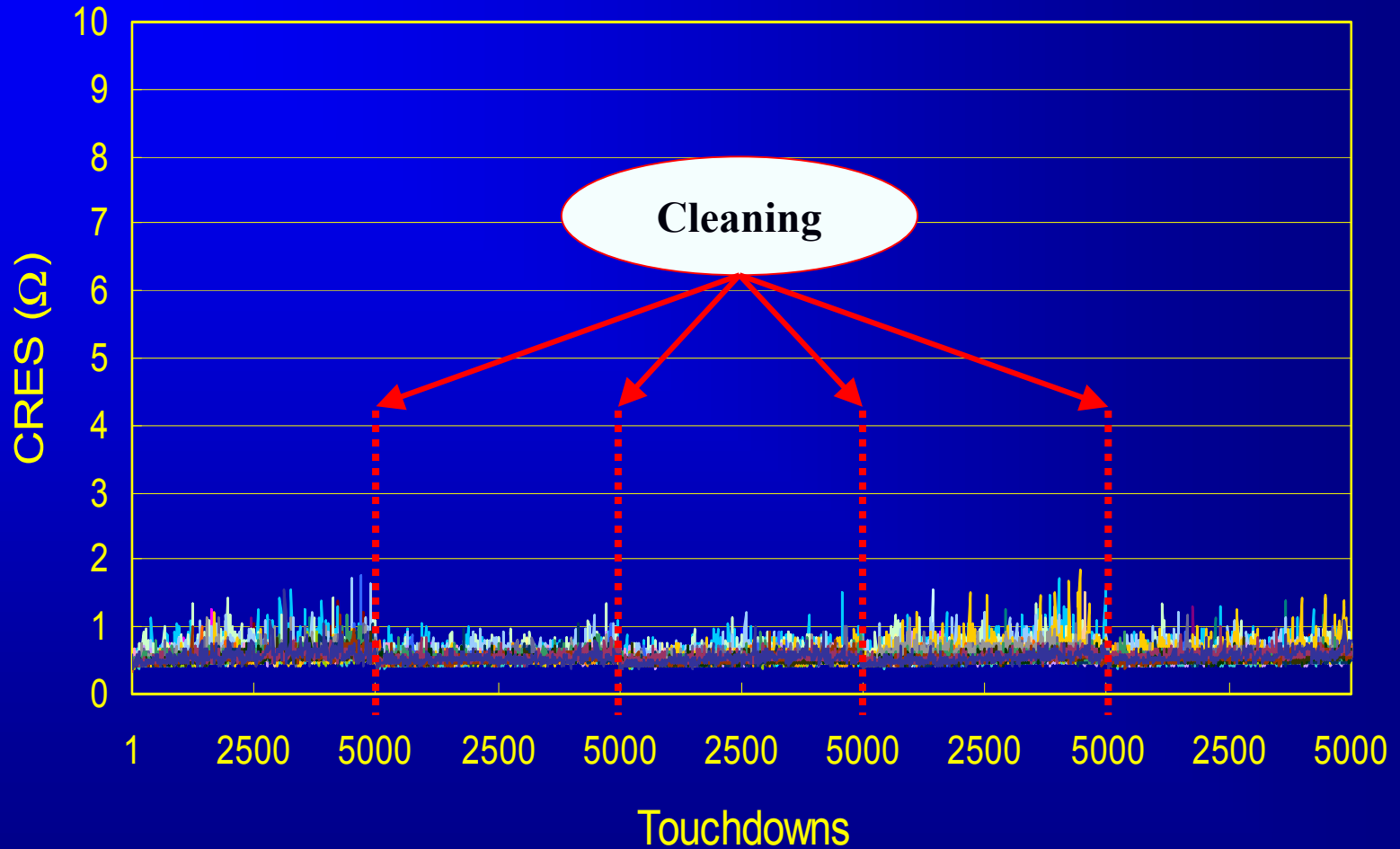
CRES Stability



TEST CONDITIONS

Temp. : 90 °C
OD : 60 μm
Load : 50mA; 10 ms
Pad : Al-Cu
No cleaning

Cleaning Data



Probe Tip Cleaning

70 μ m OD / 85 °C / Al-Cu

5K TD

Clean

5K TD

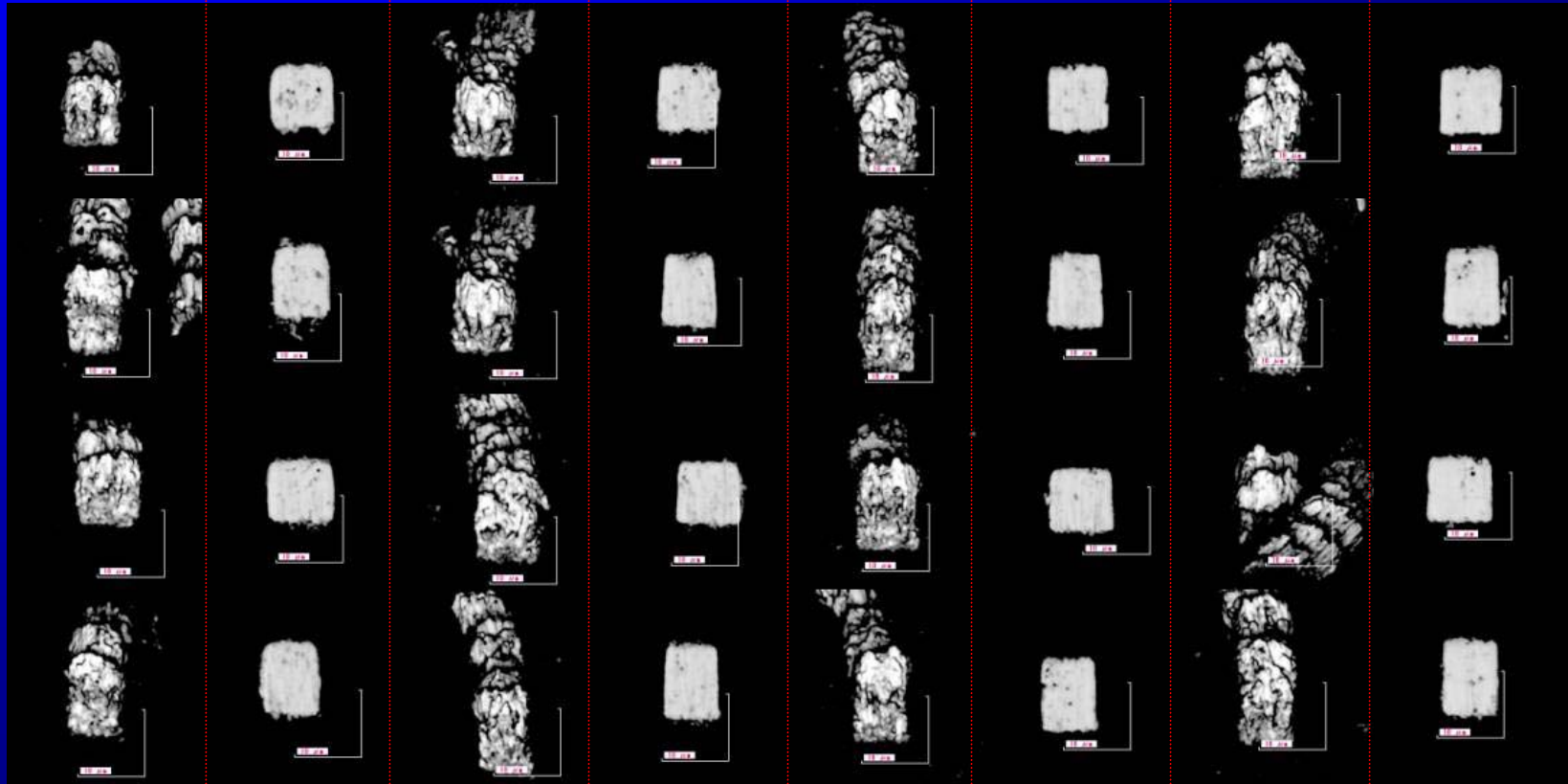
Clean

5K TD

Clean

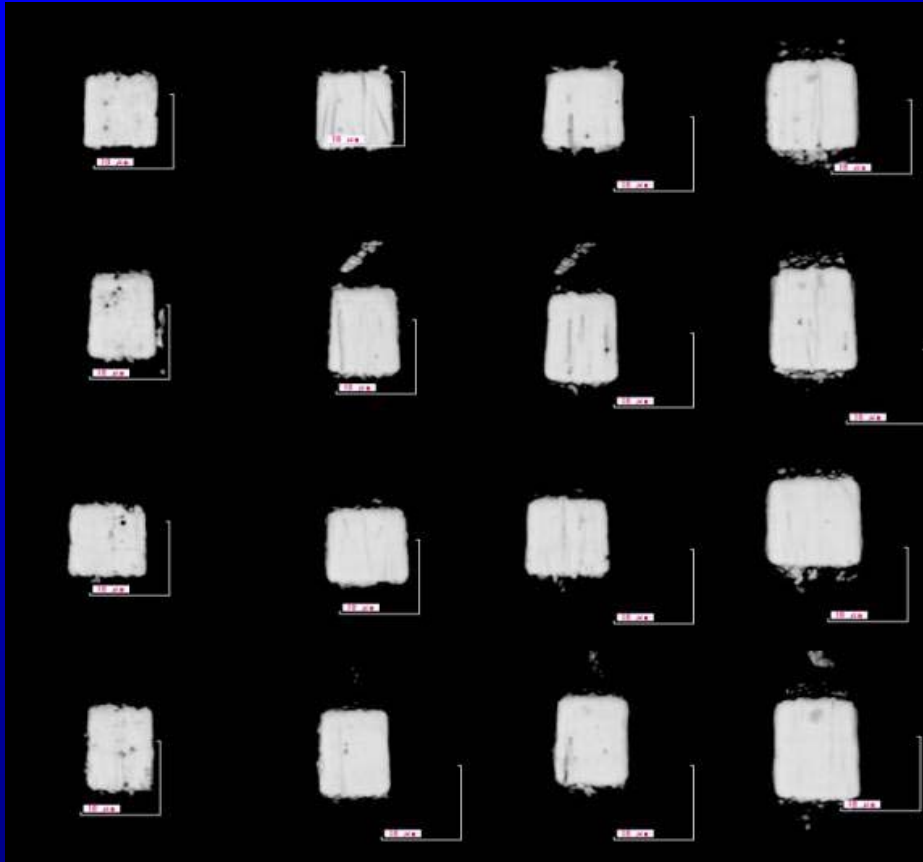
5K TD

Clean



Probe Tip Wear

INT 500TD 1000TD 5000TD



One cycle of 10 touchdowns on the cleaning sheet is repeated 500 times.

==> Probe tip wear is relatively little.

Specifications

- Minimum Pitch : 80 μm
- Probe Force : 2.8 g_f @ 70 μm OD
- Max. Scrub Mark : 30 μm
- Alignment : ± 10 μm
- Planarity : ± 10 μm
- Tip Shape : Flat-top pyramid
- Tip Size : 10 ± 5 μm
- Tip to Guide Plate : 750 μm
- Max. Current : 250 mA (continuous)

Summary

- New solution for highly-parallel memory.
- Fine pitch.
- Easy to repair.
- Uniform probe shape.
- In use at multiple production sites.