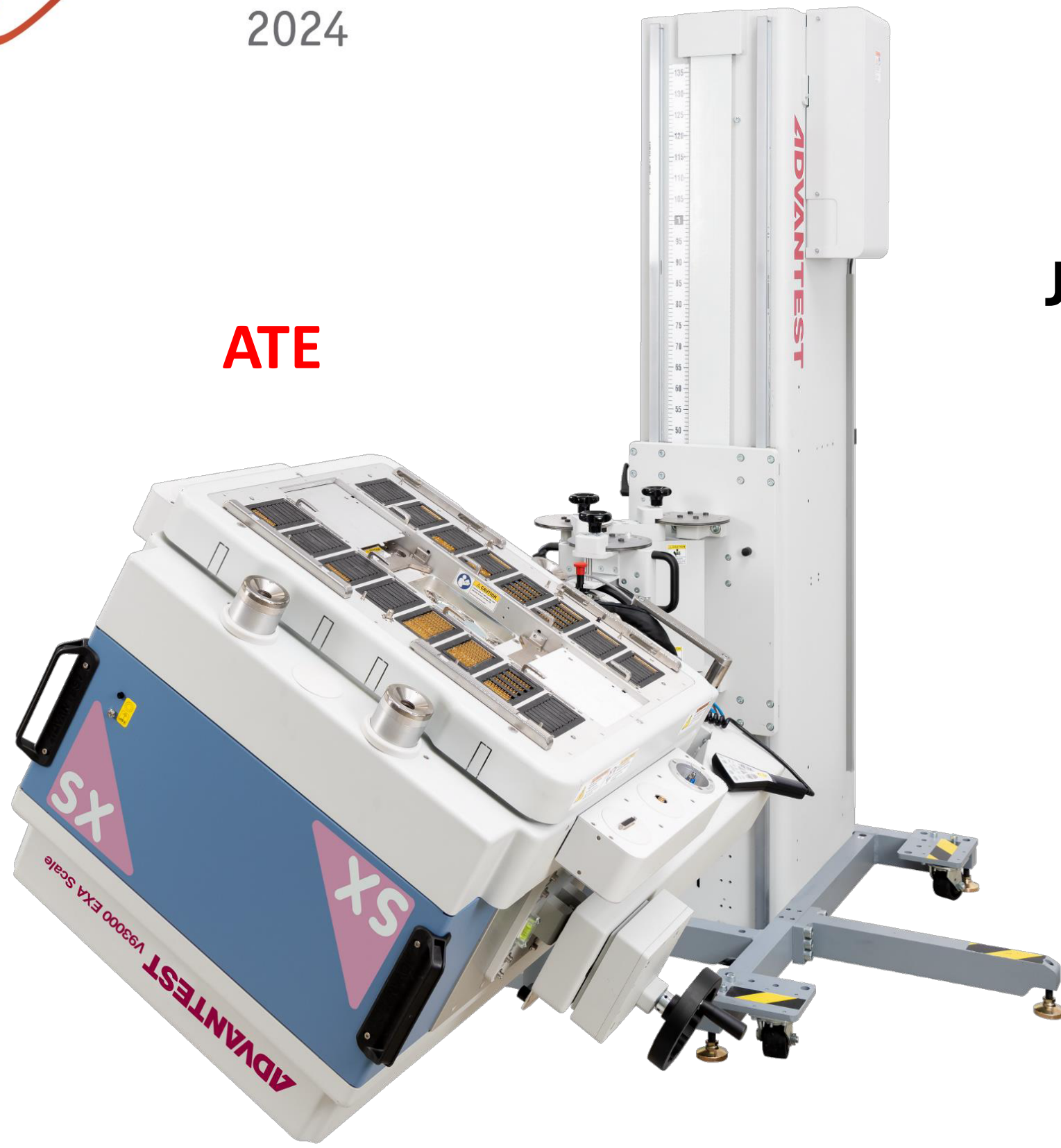


ATE Spring Pin to DUT Board Via Interconnect: Myths and Challenges

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ATE



ATE spring pin pogo block

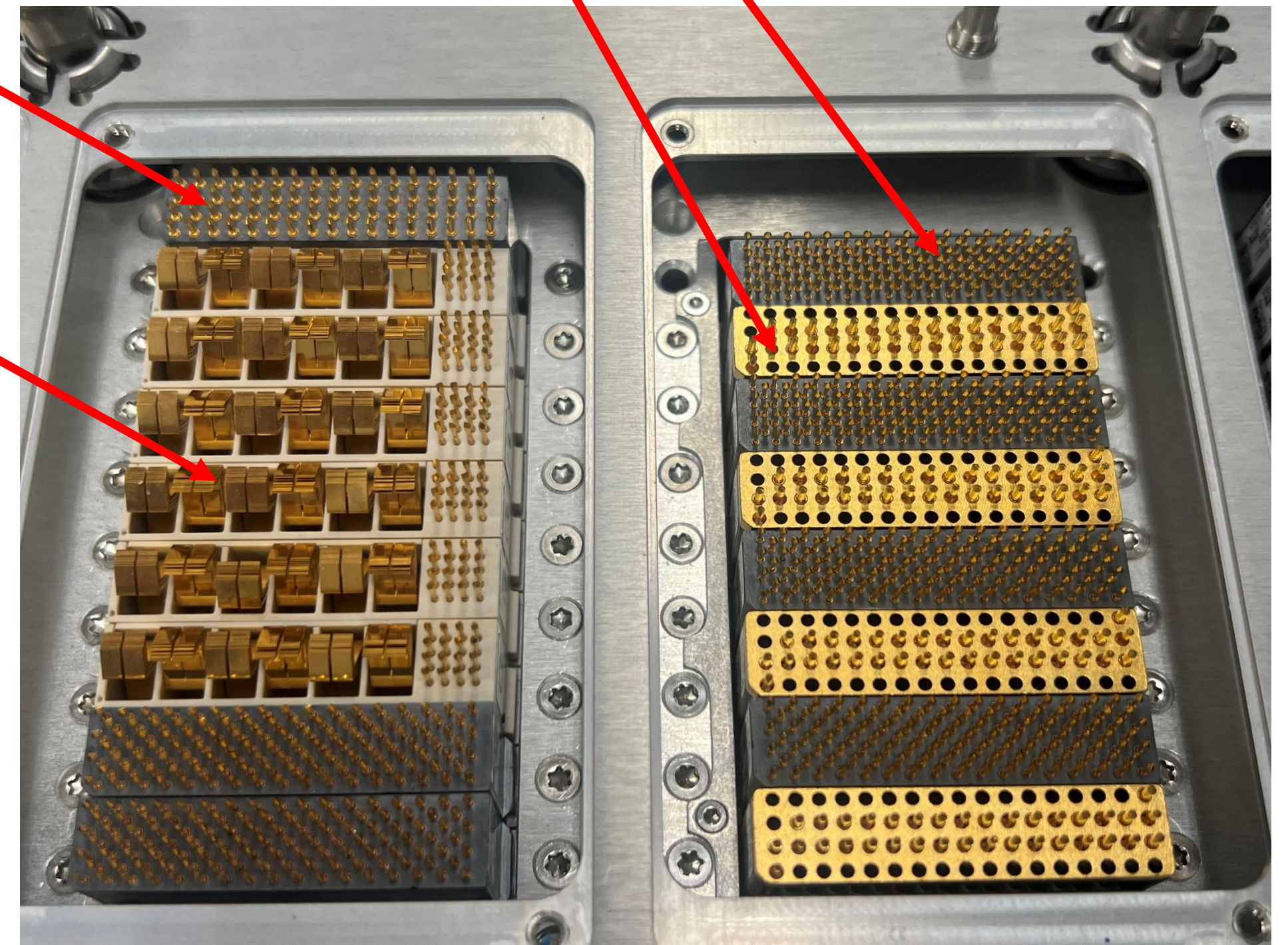


DPS

Digital

Utility

High
current
DPS

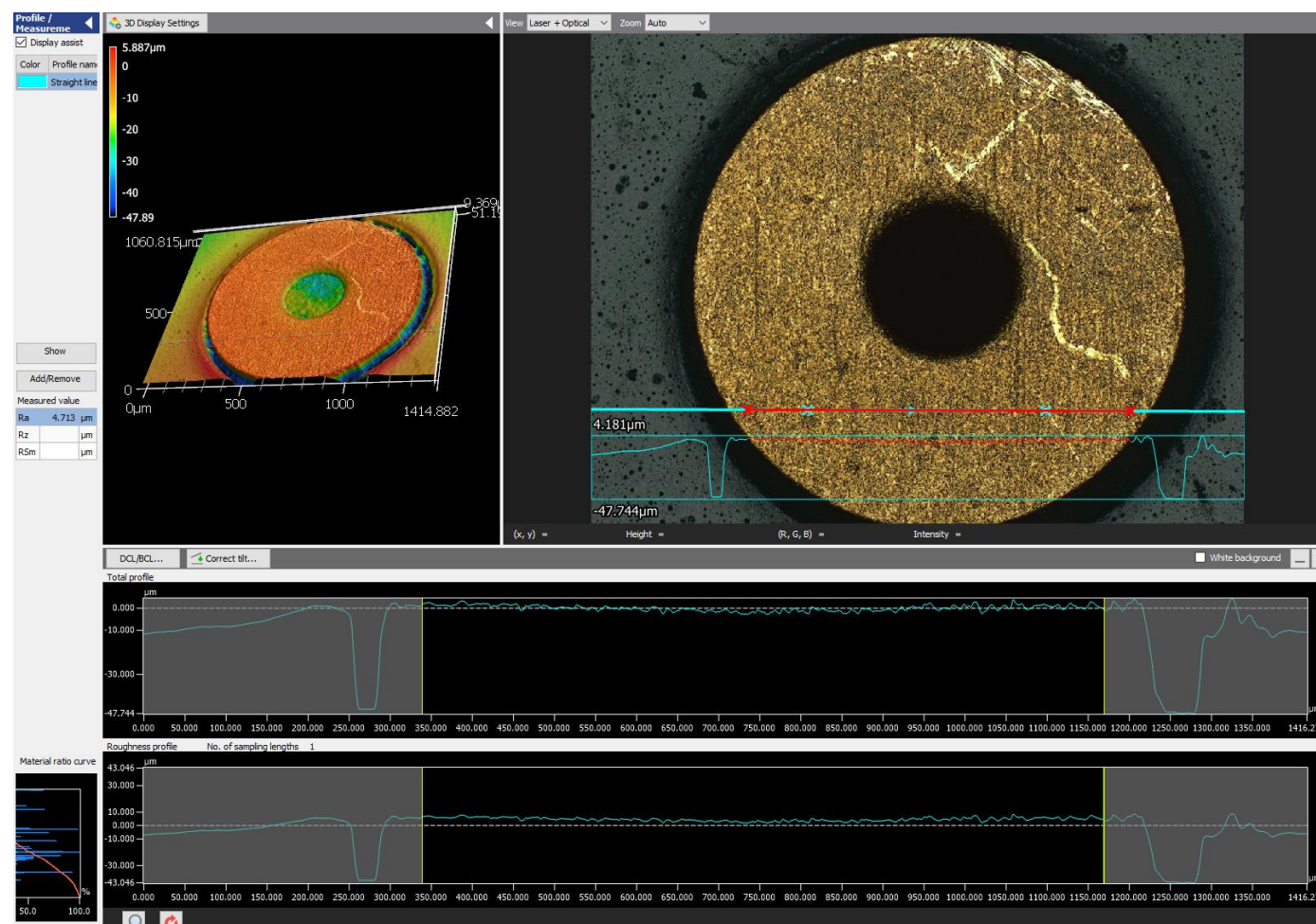
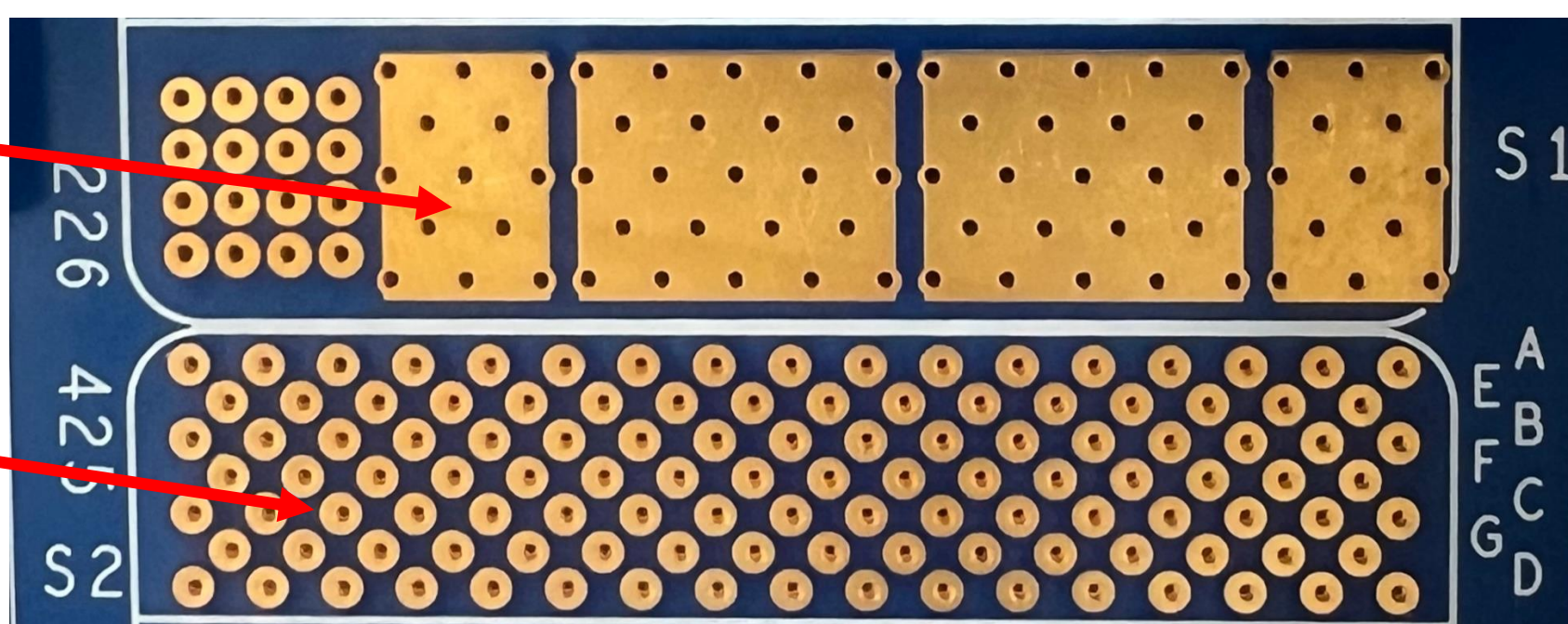


High

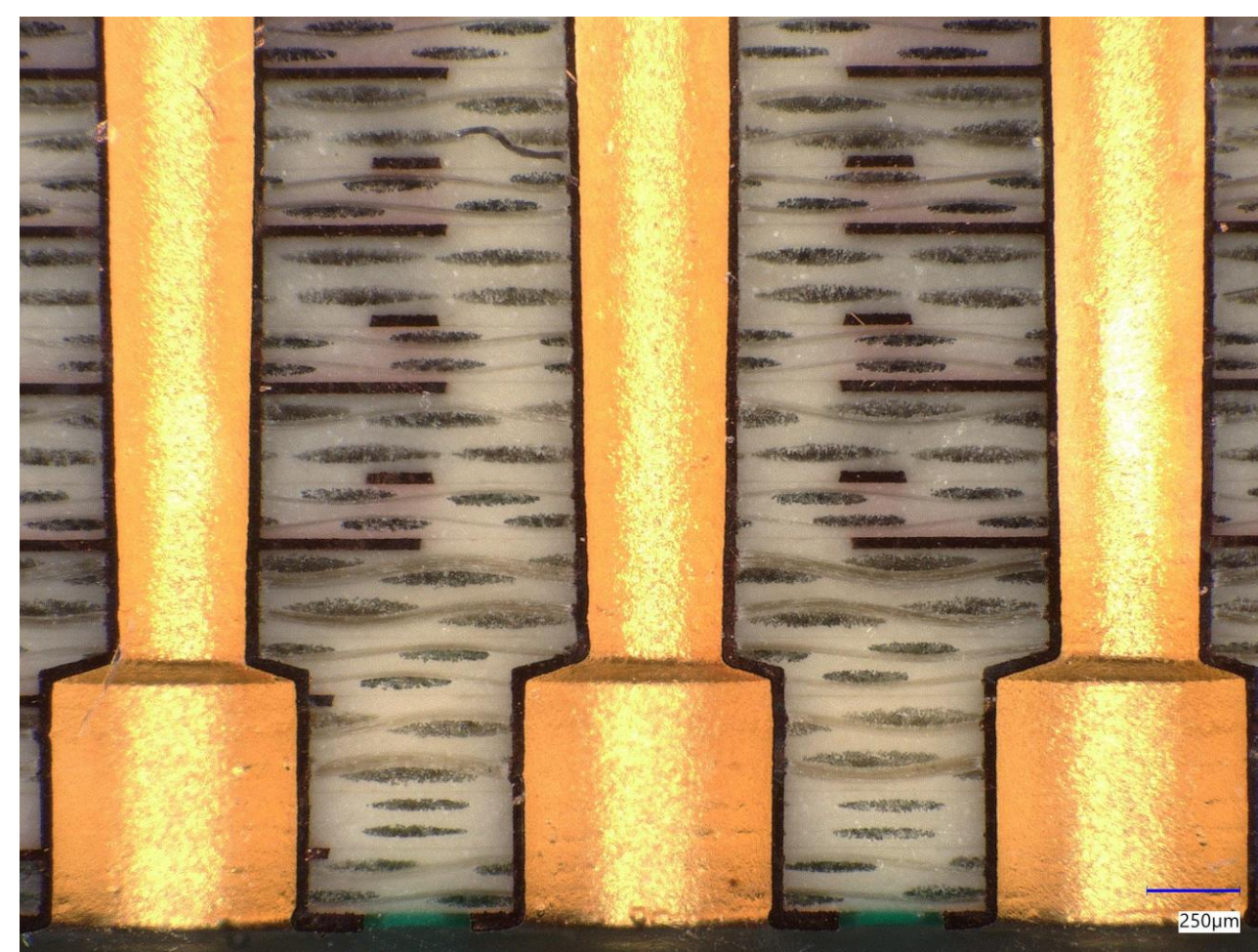
current
DPS

PCB footprint

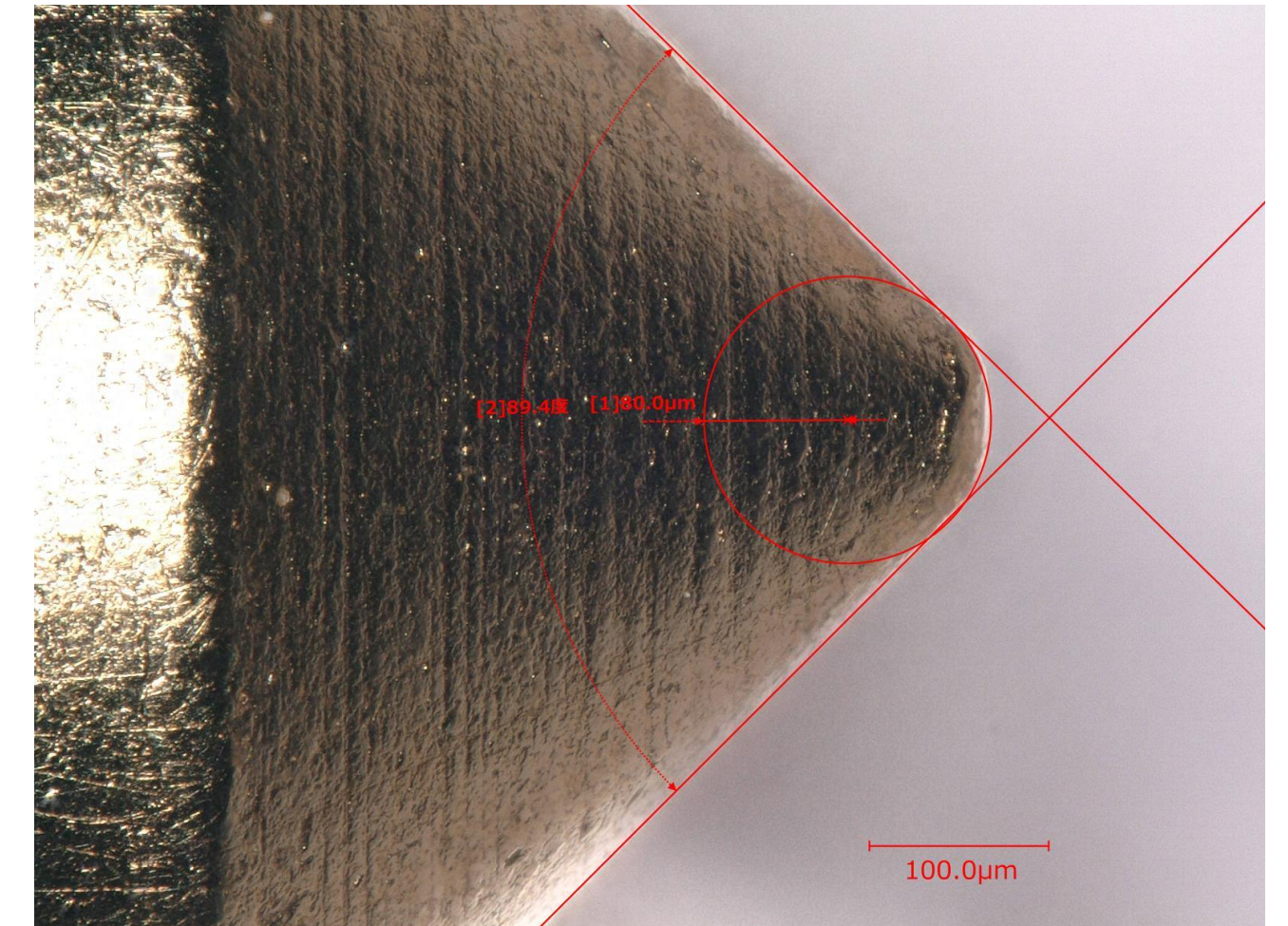
Digital



PCB mating via

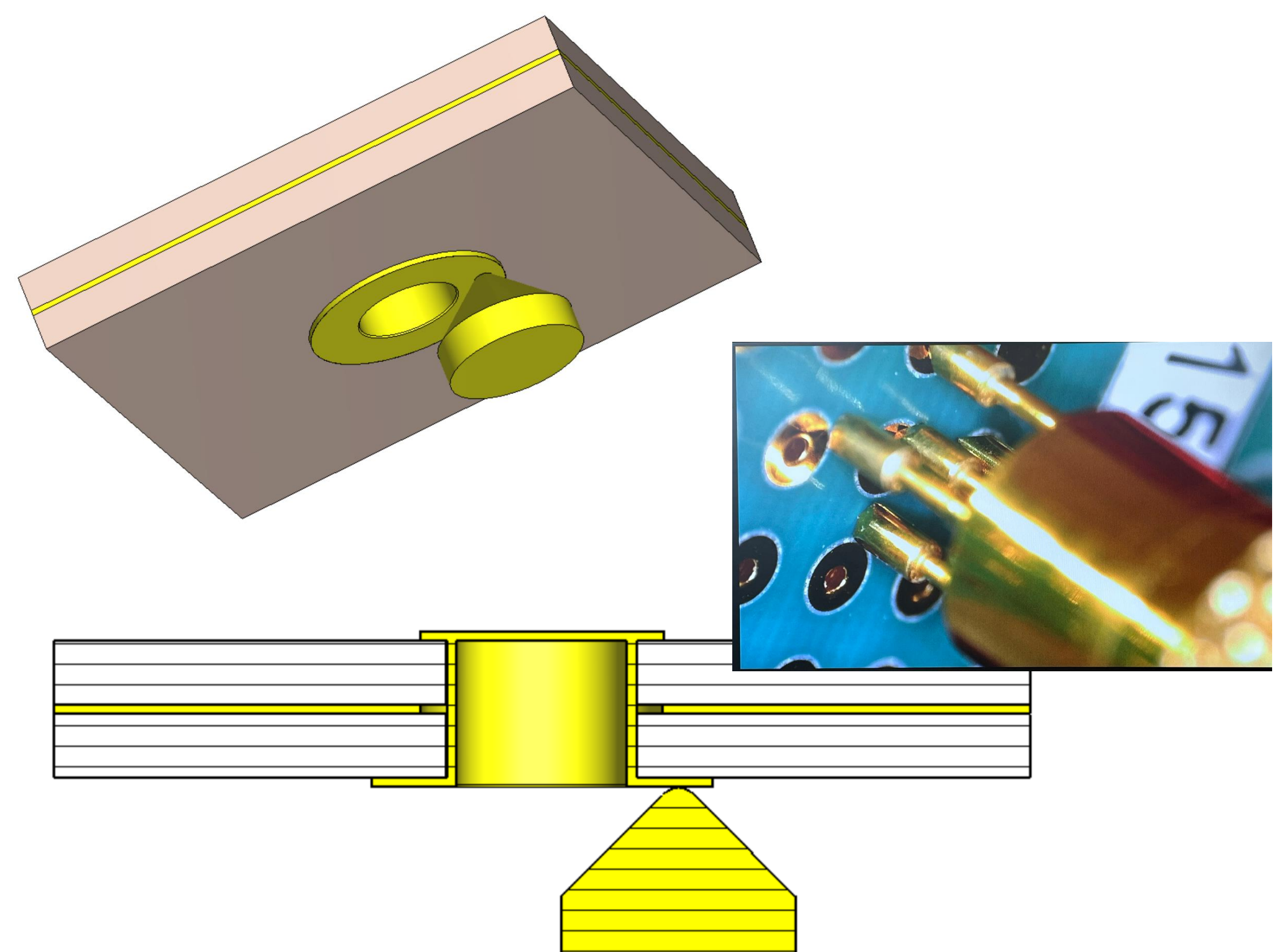
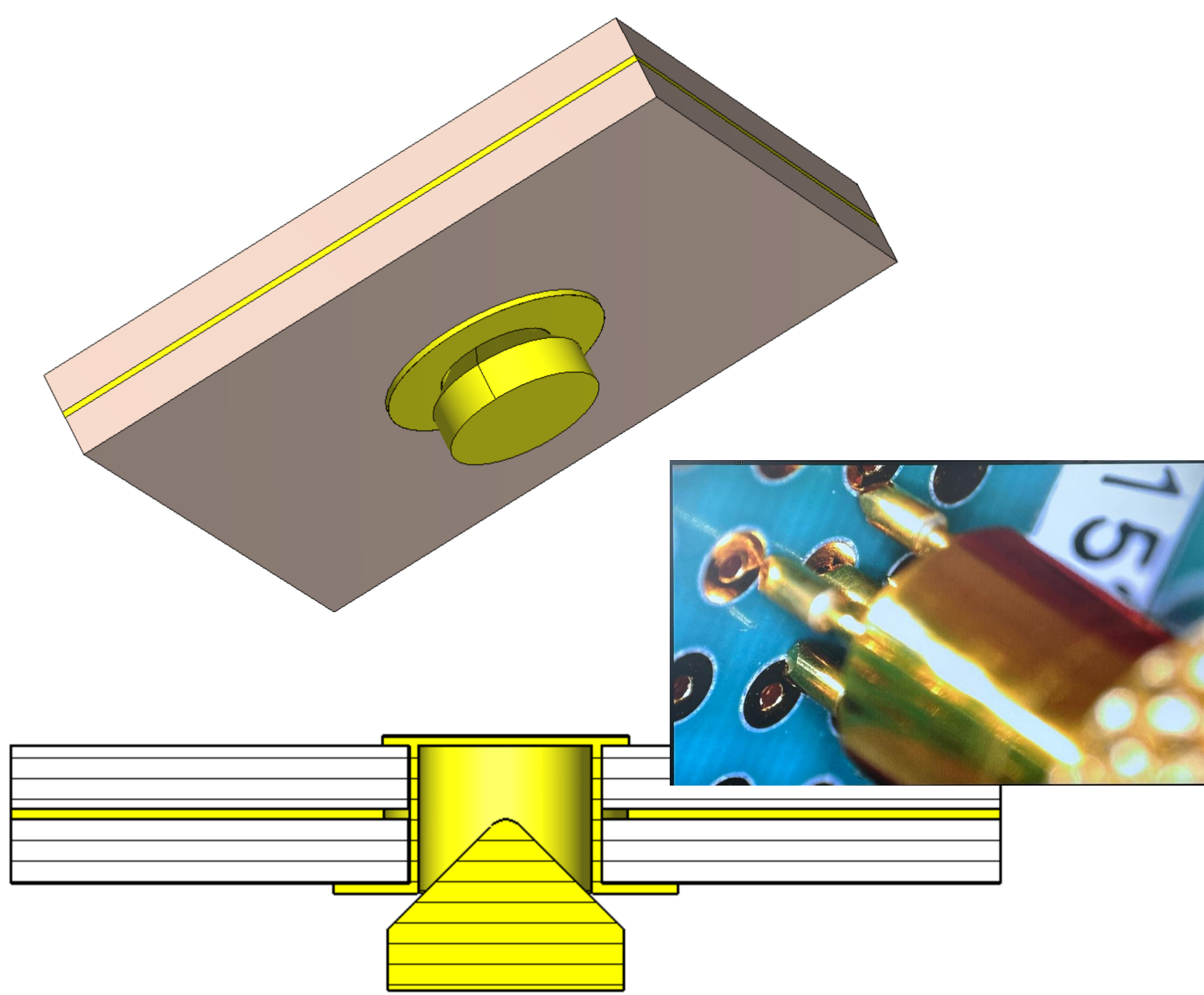


PCB cross-section



Conical spring pins are not perfect cones

The spring pin to via hole mating contact resistance myth



- 7 mOhm contact resistance difference measured on the above experiment.
- This means that there is little contact resistance (CRES) difference between spring pin in via or spring pin in pad mating in a real scenario

ATE Spring Pin to DUT Board Via Interconnect: Myths and Challenges

The PCB mating via pad size is critical

The PCB mating via pad diameter is defined to consider all uncertainties in the ATE system

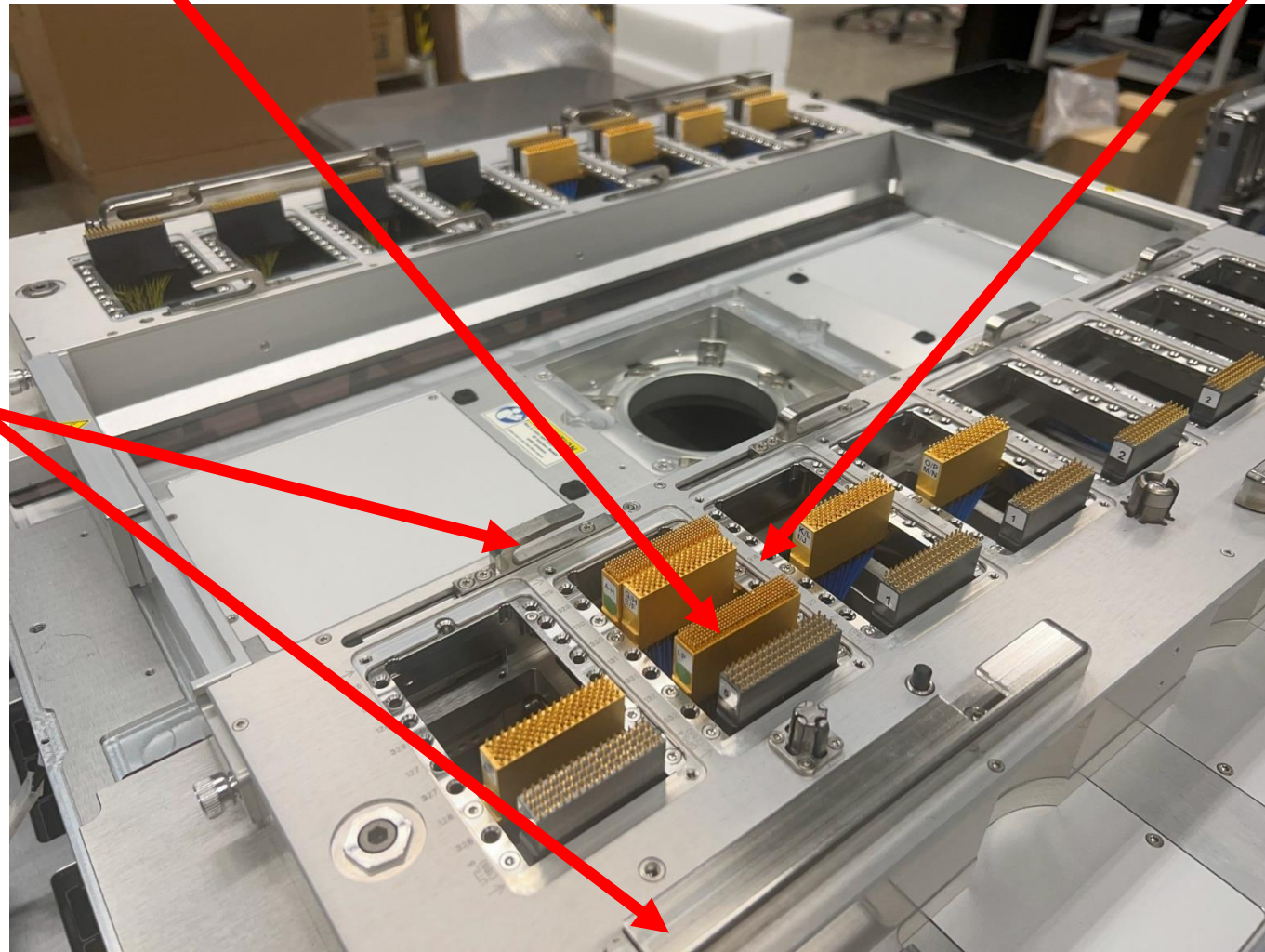
ATE and PCB accuracy reference points are not the same

Spring pin positional accuracy
inside the pogo block

Pogo block assembly accuracy
in the ATE test head

DUT board PCB
geometrical center
(PCB positional reference)

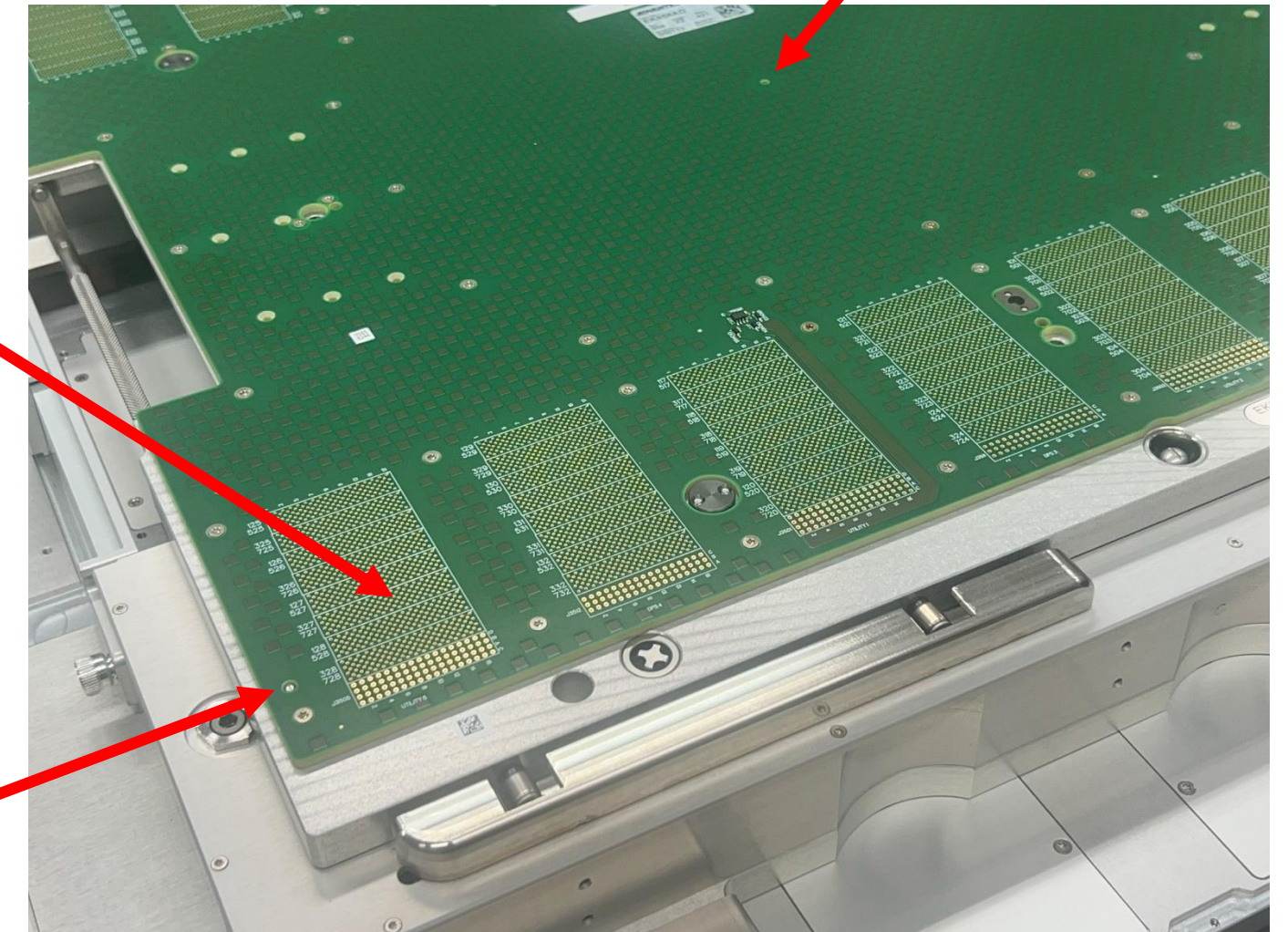
Stiffener
docking
mechanism
accuracy



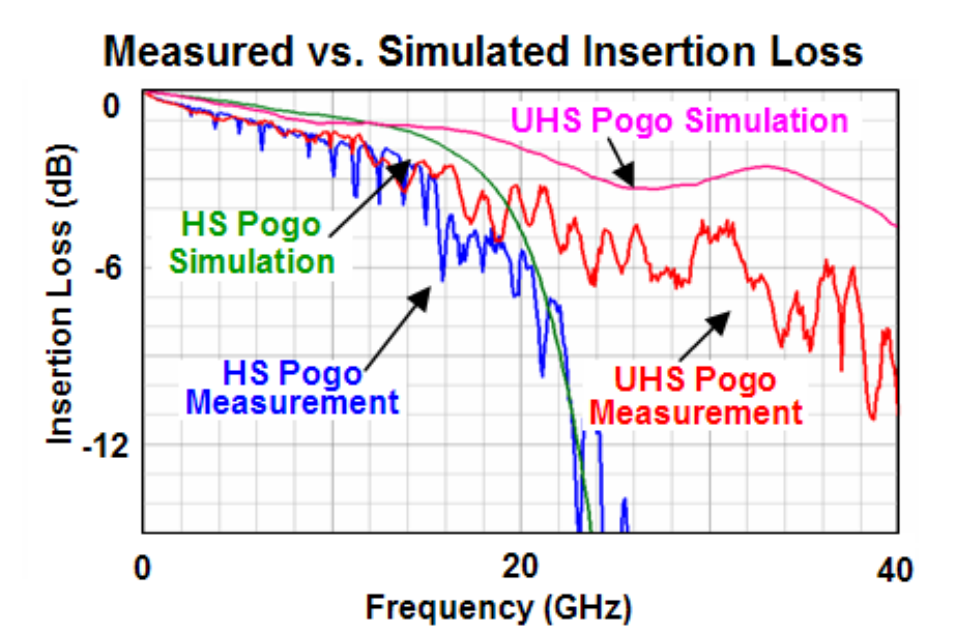
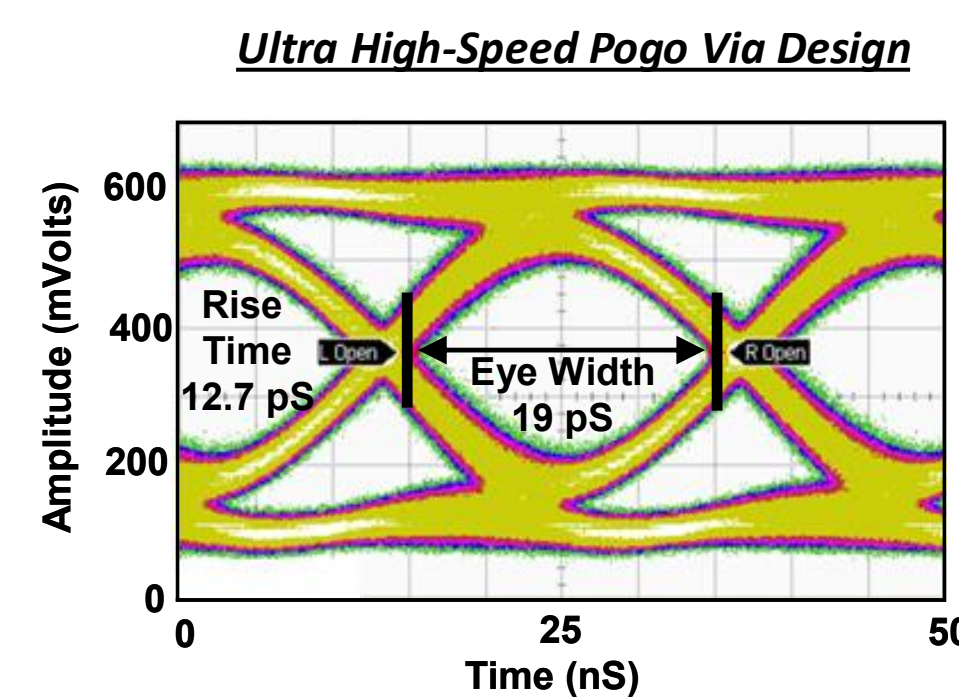
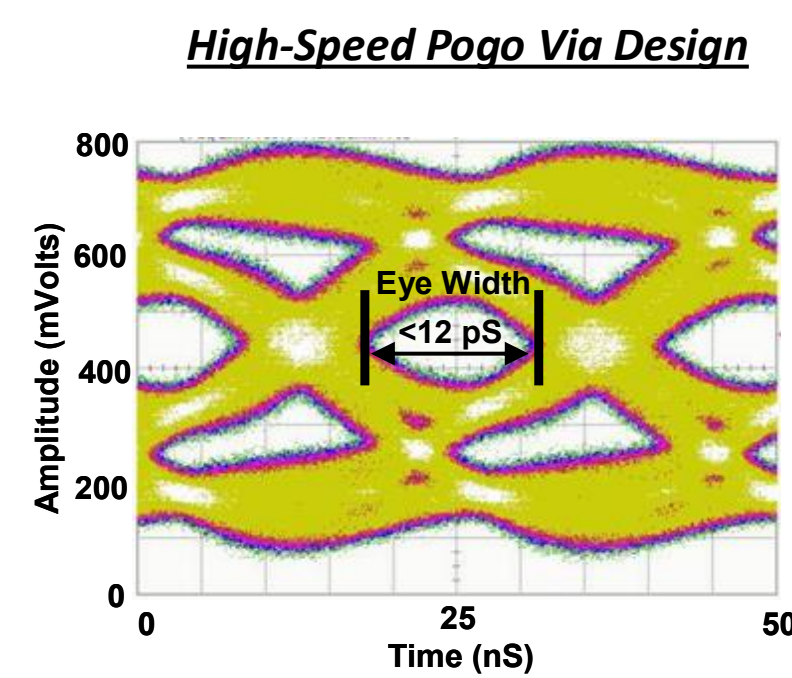
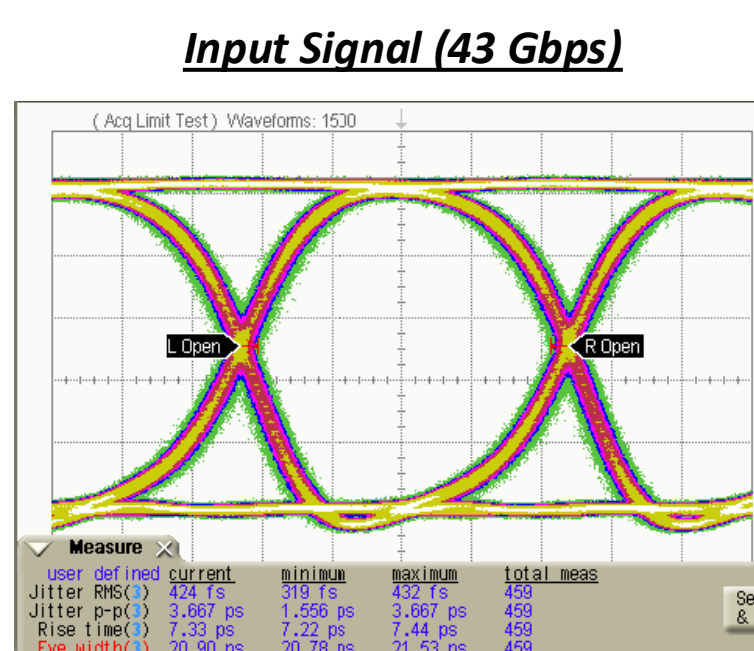
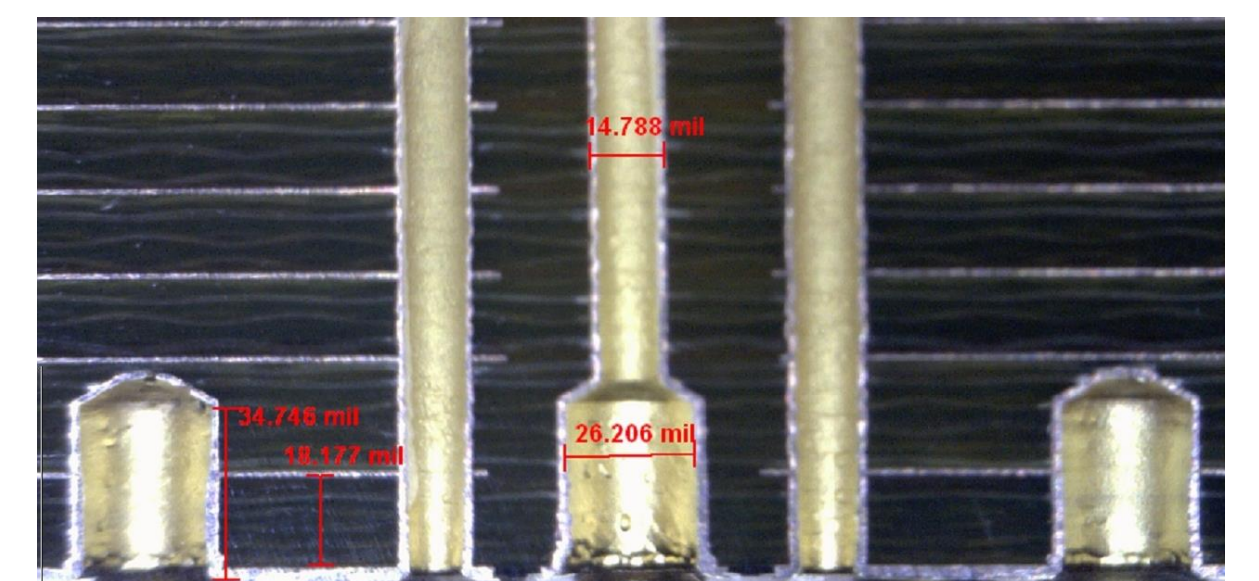
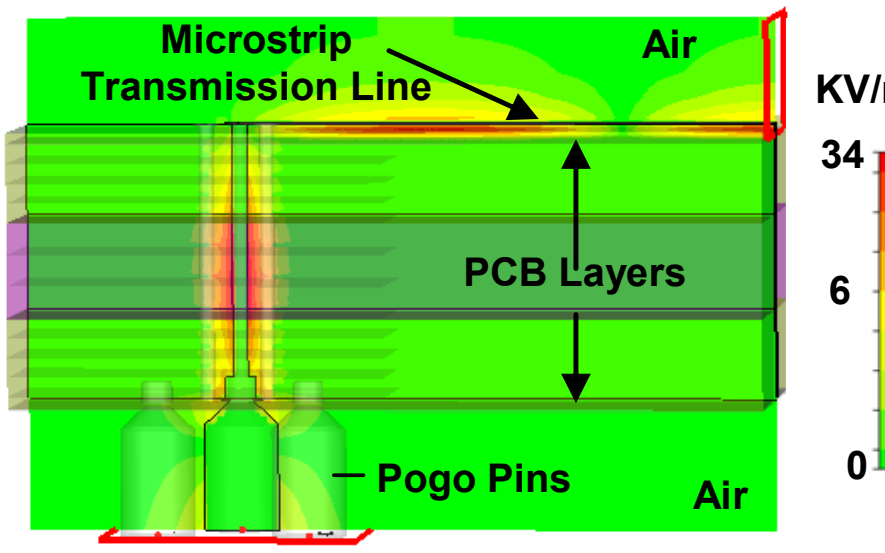
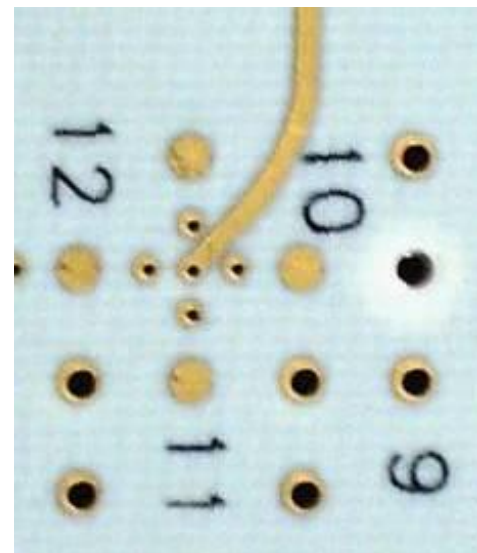
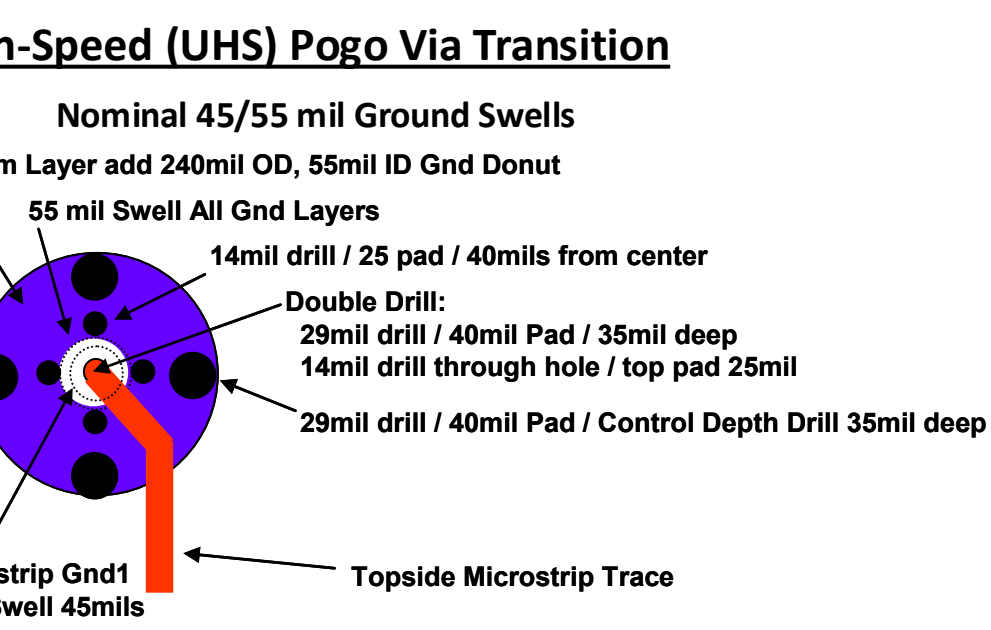
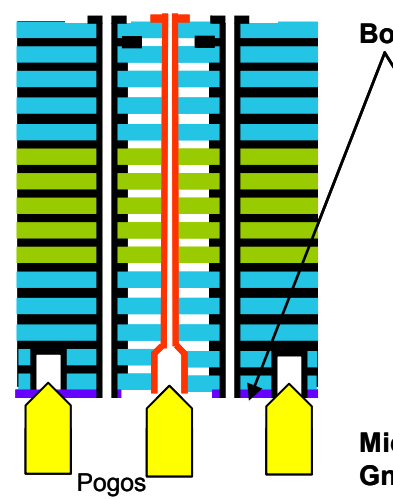
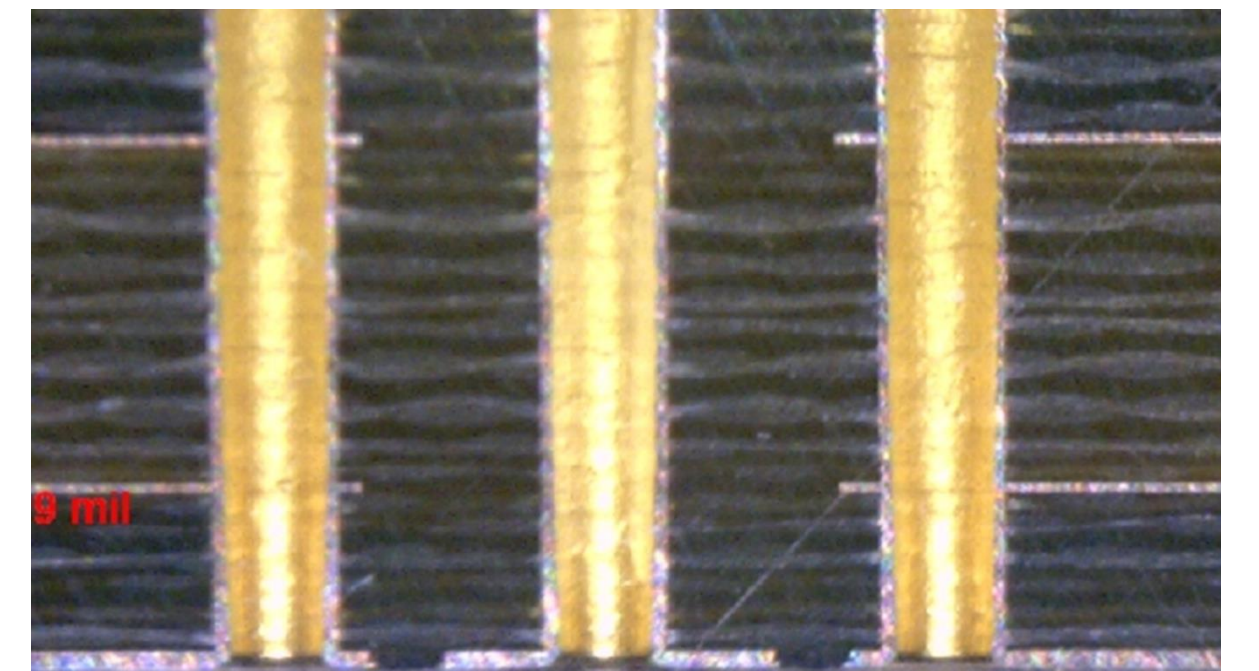
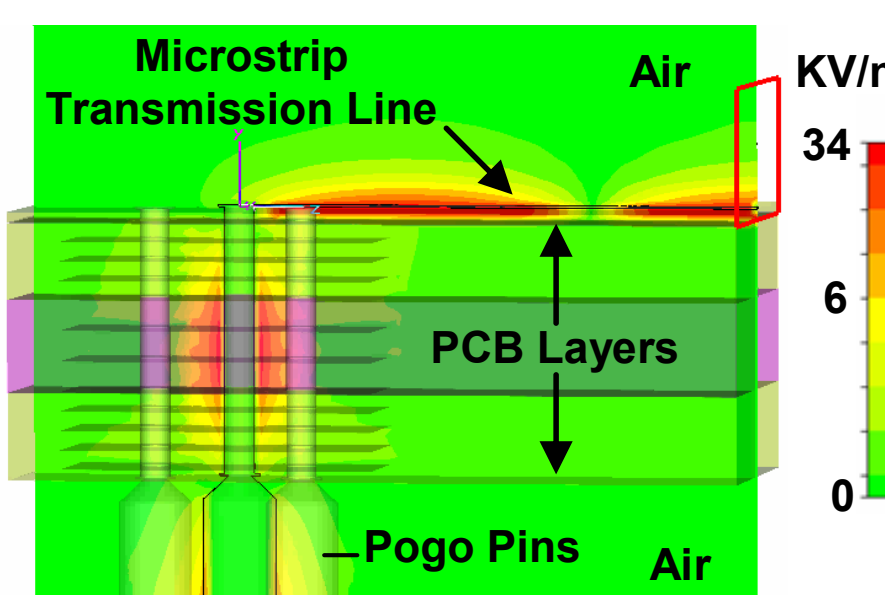
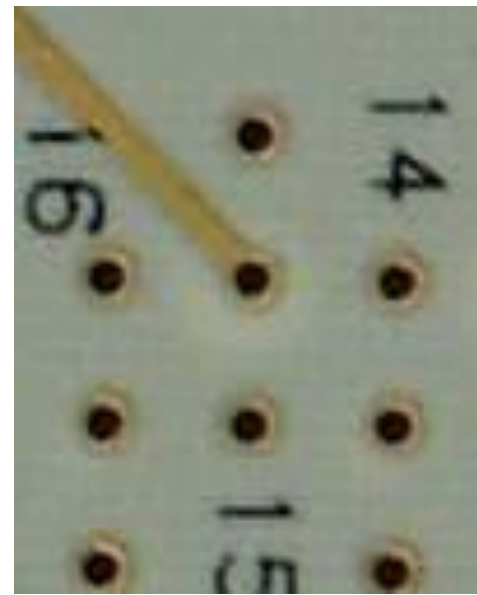
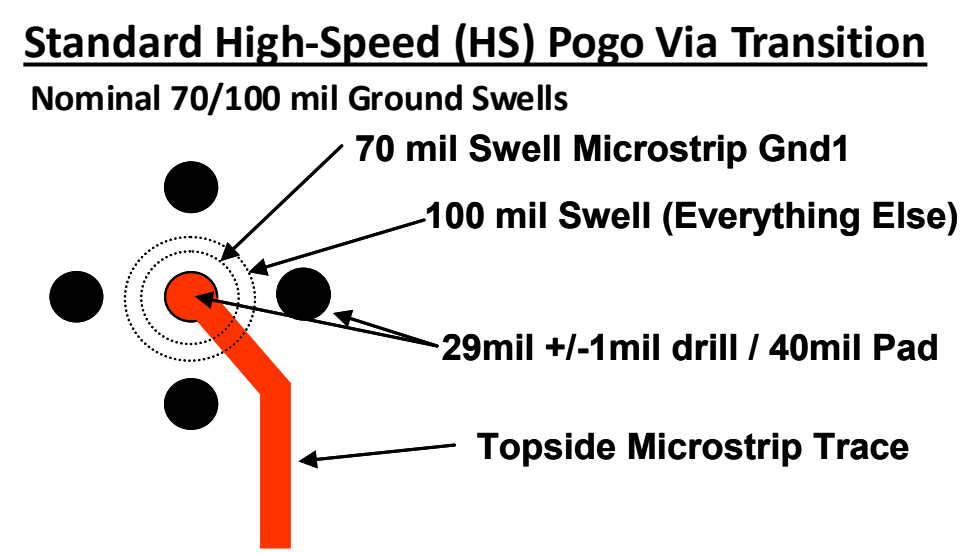
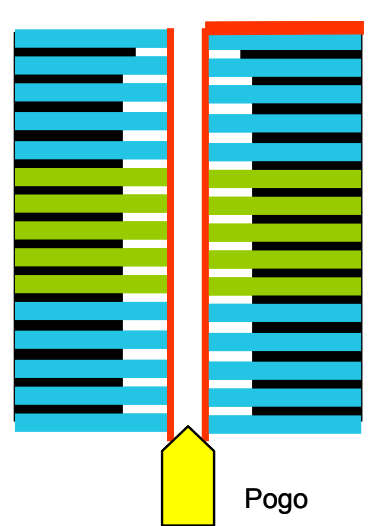
PCB via mating accuracy
contributors:

- Via pad position accuracy
- Via pad etching accuracy
- Drill position accuracy not critical

Stiffener guide pin to PCB
(ATE interface positional reference)

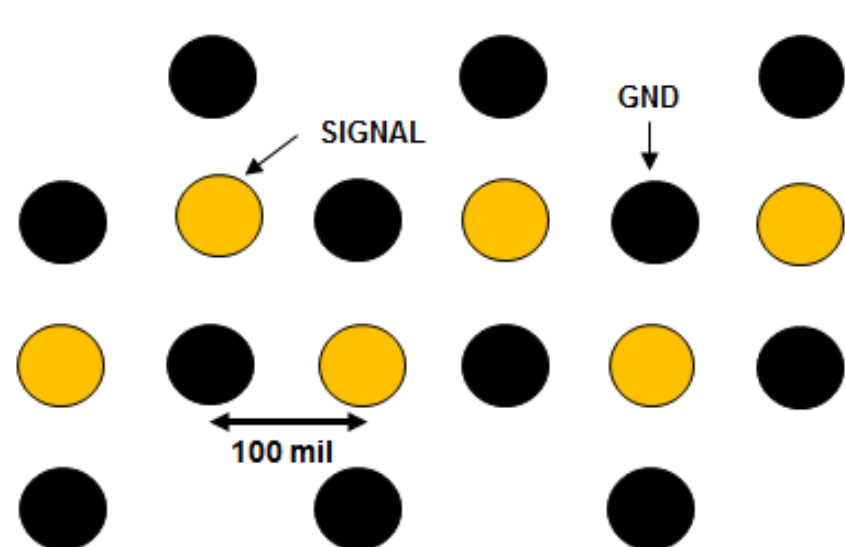


The PCB mating via design is critical for the complete interconnect performance

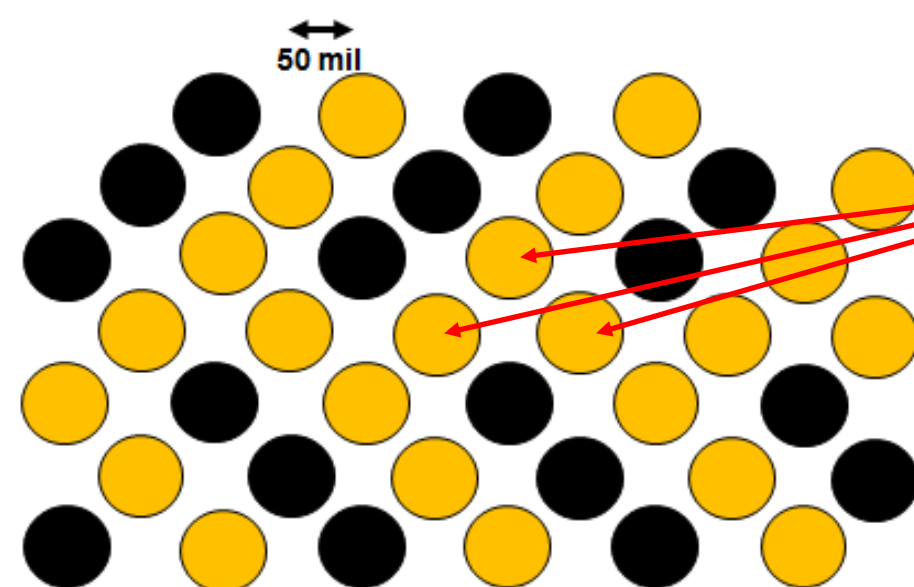


The PCB mating via design can even be used to improve isolation

LOW DENSITY POGO BLOCK

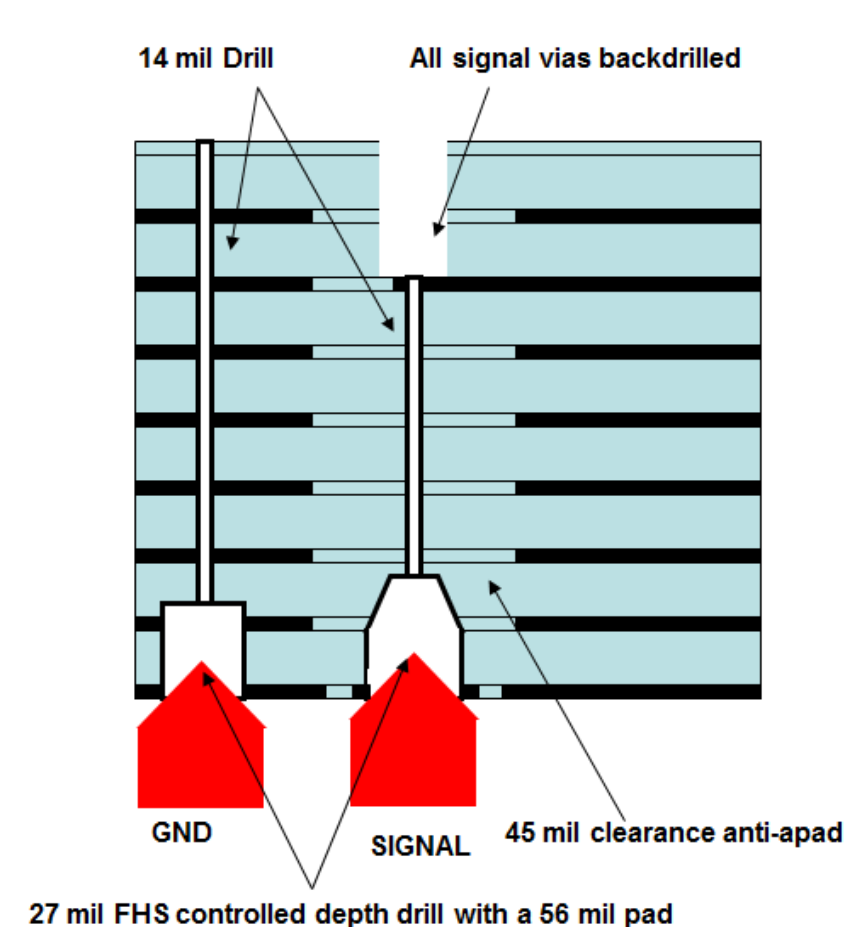


HIGH DENSITY POGO BLOCK

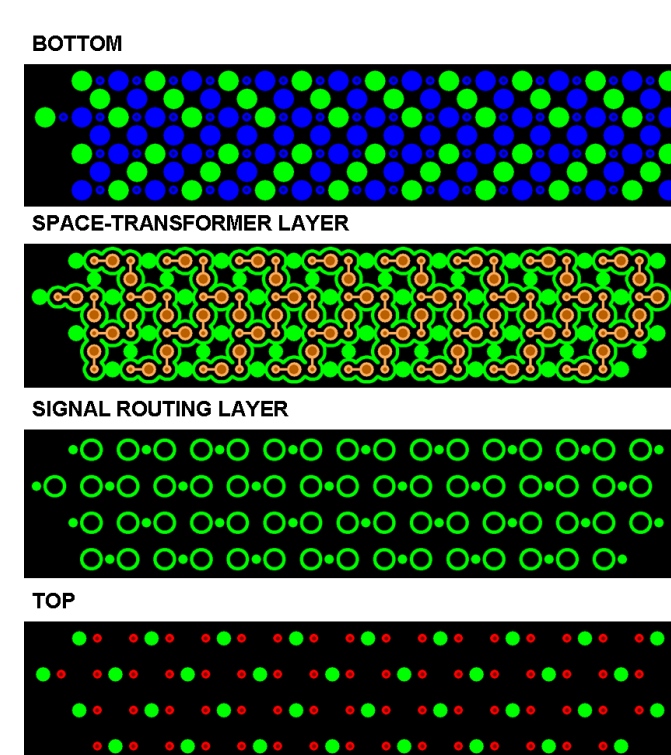
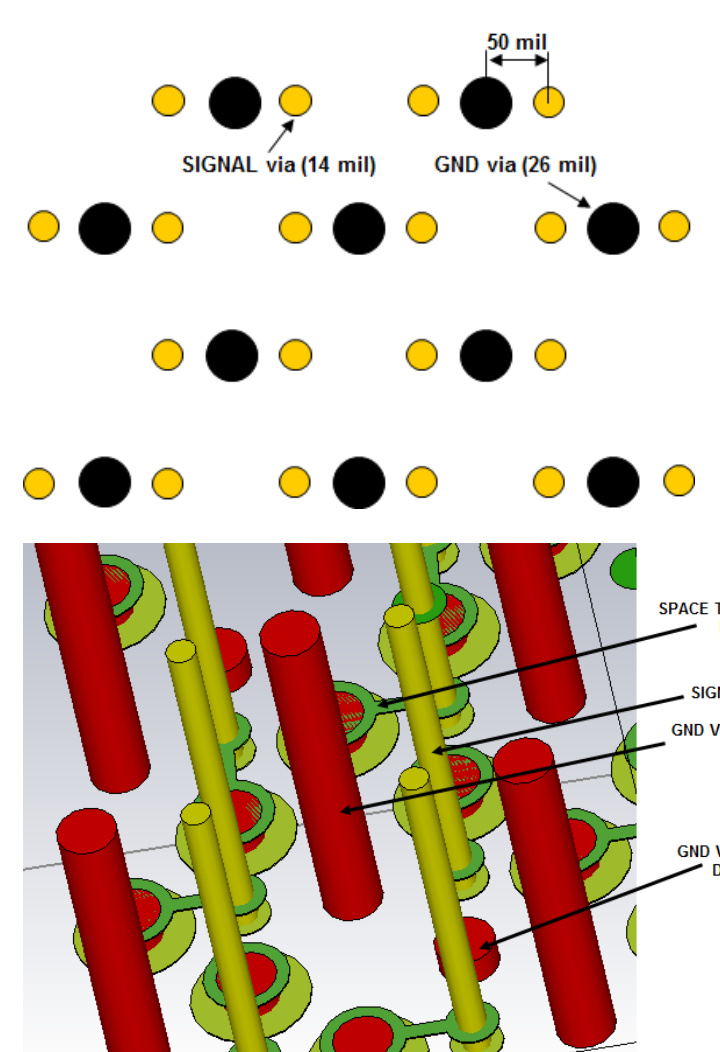


How to further
improve isolation?

Standard Mating Via Design



Improved Mating Via Design



OBJECTIVE: Create a regular
pogo via array

