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Zero Keep Out Zone Socketing Techniques: The advantages and the Limitations

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BACKGROUND

- We are seeing more demand for socketing BGA/LGA packages to OEM/ODM platforms.

- Validation is moving to be on OEM like validation platforms.

- Traditional socketing techniques require keep-out-zone on the platform.

- Most of OEMs/ODMs platforms are designed with no socketing hooks as part of the original design.

- We have worked on several technologies internally and in cooperation with industry partners to enable these type of Zero KOZ socketing solutions.

CHALLENGES

- Reliability - Validation HW are expected to sustain large number of usage cycles >300.

- Heatsink and Thermal Tools enabling

- Interposers – Zero KOZ solutions need to work with N-1, coax, Power and other types of interposers

- Usability – Validation engineers saw large number of packages over the program life cycle, time to swap packages and the ergonomics aspects of it need to be considered.

- Signal and Power Integrity: solution impact on signal and power integrity need to be as small as possible
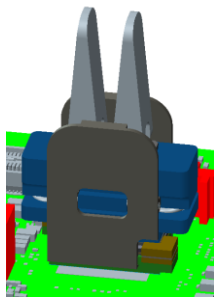
- Cost

SOLUTIONS

- Two major solution domains:

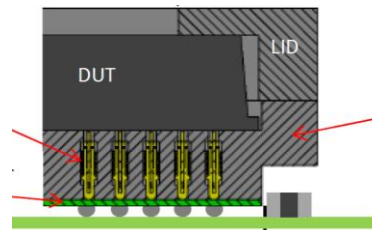   - Surface Mount Technology (SMT) based
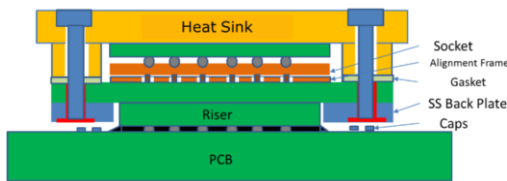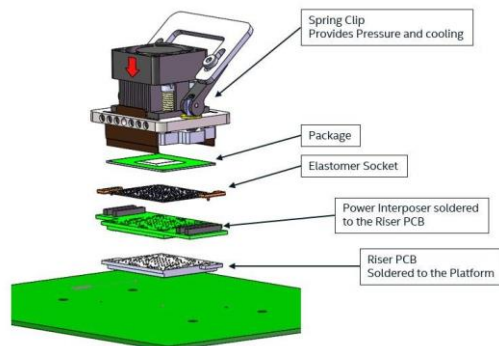

Wing Riser
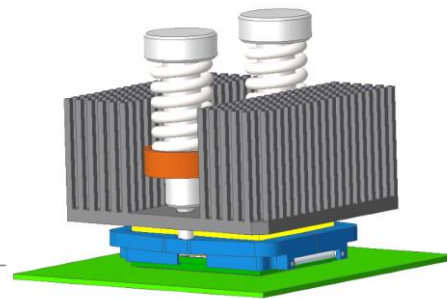
Portable Wing Riser

POP Spring Clip
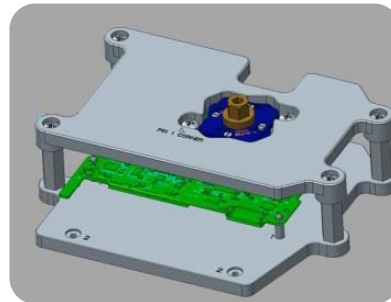

SMT with Spring-Pin

[HSIO Technology]

Grypper Socket

[HSIO Technology]

Riser with Power Interposer

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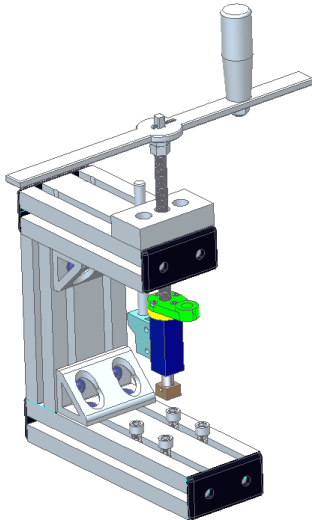
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SOLUTIONS

- Two major solution domains:

  - Chassis based
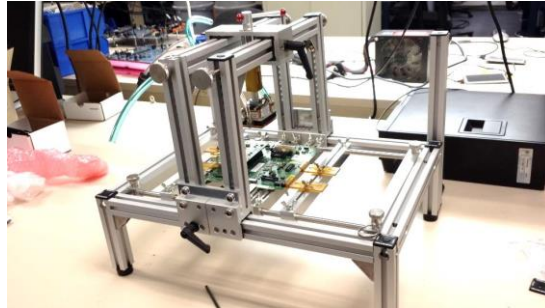
SUMMARY

➢ Several ZKO technologies were explored at Intel side in the last two years. Each technology has its advantages and limitations

➢ One big challenge is to get the technology to work with minimum failure rate possible. This is more challenging for debug work needed on customers platforms.

➢ Solder joint quality and reliability is a concern for SMT type approaches

➢ Some SMT approaches depends on other technologies such as coax-riser. This increase the challenge as the maturity of these technology is progressing.

➢ Several approaches were used to aligning socket to platform for non-SMT type sockets.

➢ Chassis based approaches were found more reliable in getting the system to work with no issues the first time.

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