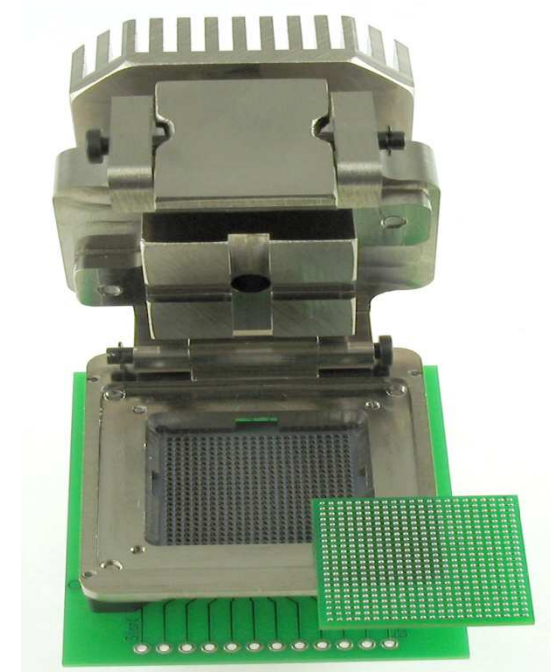




**Ironwood
Electronics, Inc.**



Multilevel Socket Technologies

**High Performance
IC Sockets And
Test Adapters**

Overview



● Company Overview

- Over 5,000 products
- High Performance Adapters and Sockets
- Many Custom Designs & Turn-Key Solutions
- Engineering – Electrical and Mechanical
- ISO9001:2008 Registration

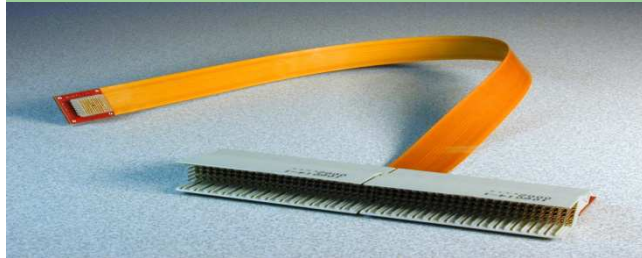
● Capabilities Overview

- Simulation
 - QFIN for heat sink design
 - Microwave Studio for electrical
- 3D Solid Modeling CAD & CAM
 - ProEngineer
 - Solid Works
 - Gibbs cam
- PCB Technology
 - PADS Layout, PADS Router
 - Controlled Impedance, Embedded Resistors, Laser Micro Vias, Filled Via in Pad, 3/3 traces, Rigid-flex PCBs
- State of the art CNC machines - Tight Tolerance 3D Machining (e.g. $\pm 0.0127\text{mm}$), Swiss screw machine, Print, Pick, Place & Reflow assembly line, High speed PCB drilling, Automated Optical Inspection

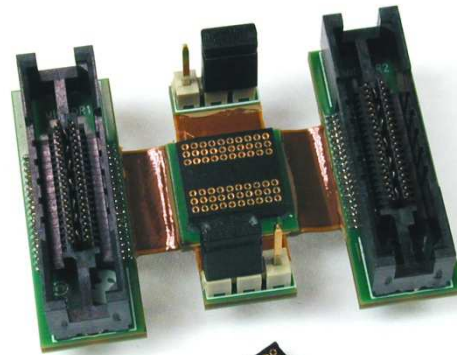
Product Overview

- GHz Elastomer Sockets
- Spring Pin Sockets
- Silver Particle Sockets
- Stamped Pin Sockets
- Silver Matrix Sockets
- Giga-snaP BGA Socket Adapters
- SMT Package Emulation
- Package Convertors
- Prototype, Probing & Analysis Adapters
- Electronic Modules

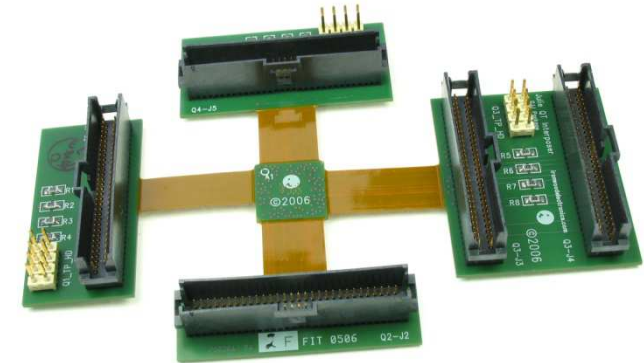
Multi-Level Sockets & Flex Probes



Flex emulator – 125 position AMP Z pack connector to 80 position female interface



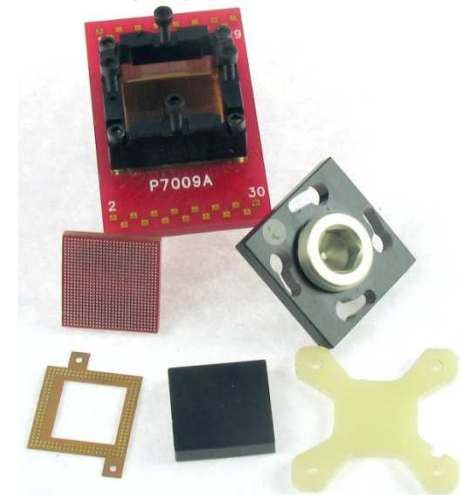
60 pin, 0.8mm pitch BGA rigid-flex probing adapter with AMP micro connectors and BGA surface mount foot



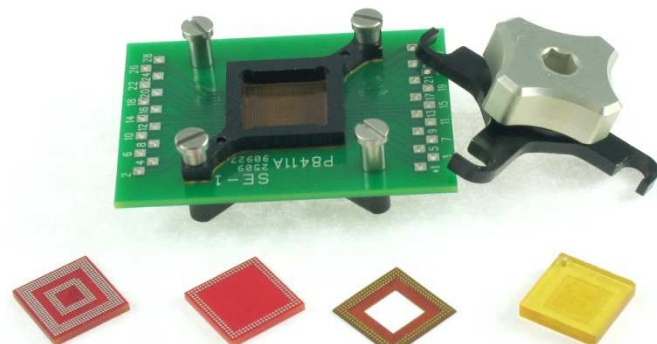
0.5mm pitch 13x13 array 169 position BGA solder balls to AMP 104068 connectors using rigid flex PCB



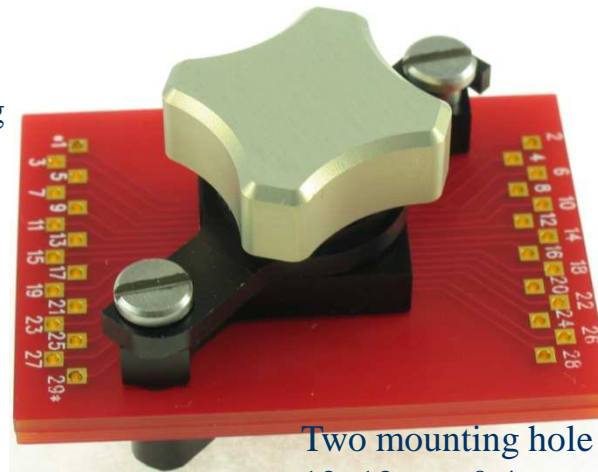
0.5mm pitch 21x21 array 289 position BGA solder balls to AMP 104068 connectors using rigid flex PCB with socket fixture



Multi level socket, 12x12mm, 0.4mm pitch 516BGA processor with 12x12mm, 0.5mm pitch 168BGA memory



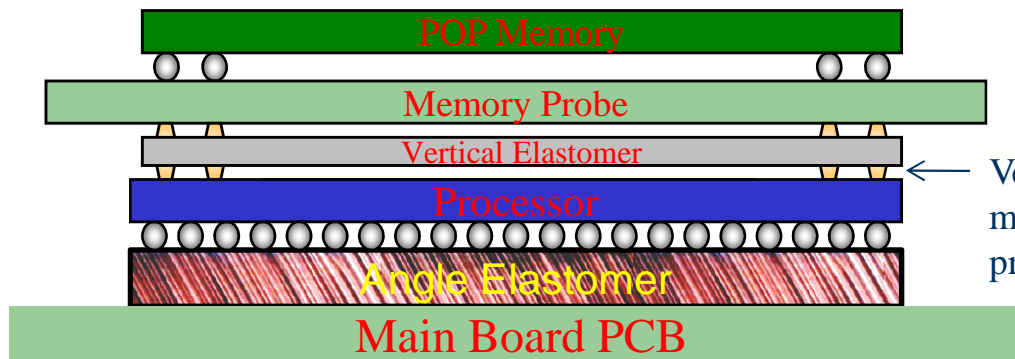
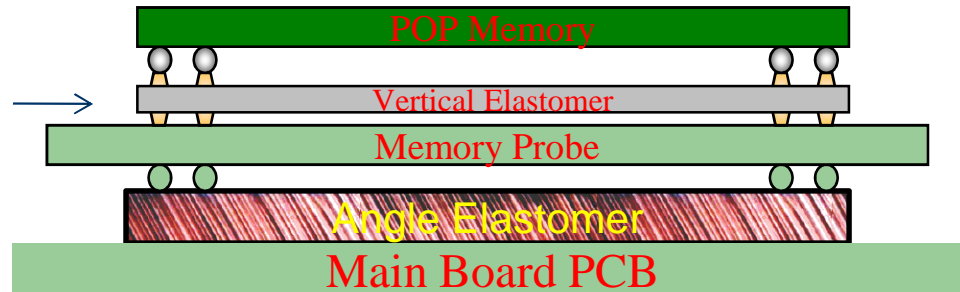
Multi level stacked socket, 12x12mm, 0.4mm pitch 515BGA processor with 12x12mm, 0.5mm pitch 168BGA memory



Two mounting hole socket, 12x12mm, 0.4mm pitch 515BGA processor with 12x12mm, 0.5mm pitch 168BGA memory

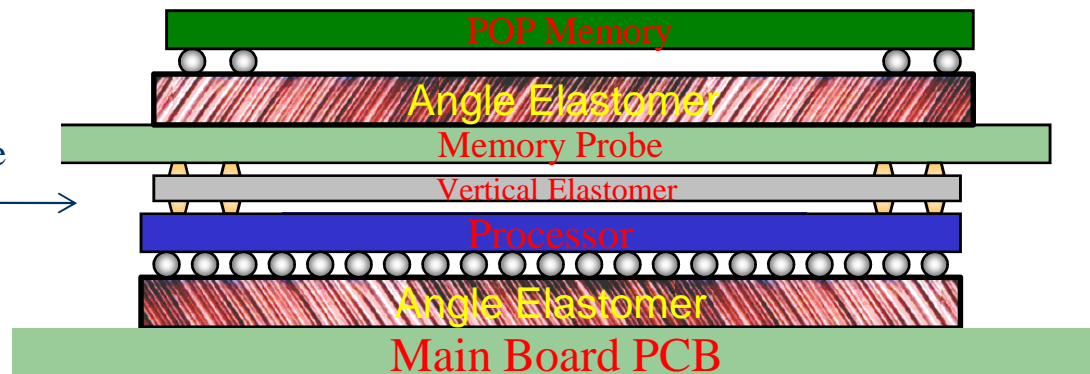
Multi-Level Socket Configurations

Vertical and angle elastomer interfaces PoP memory and memory probe to target PCB.

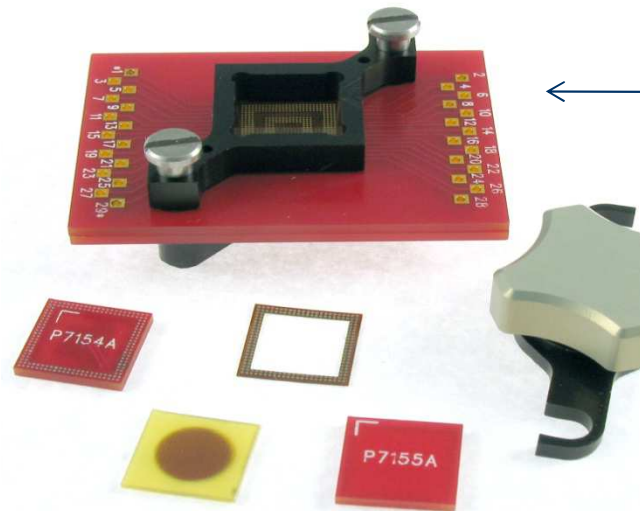


Vertical and angle elastomer interfaces PoP memory soldered on memory probe and processor to target PCB.

Vertical and two angle elastomer interfaces PoP memory, memory probe and processor to target PCB.

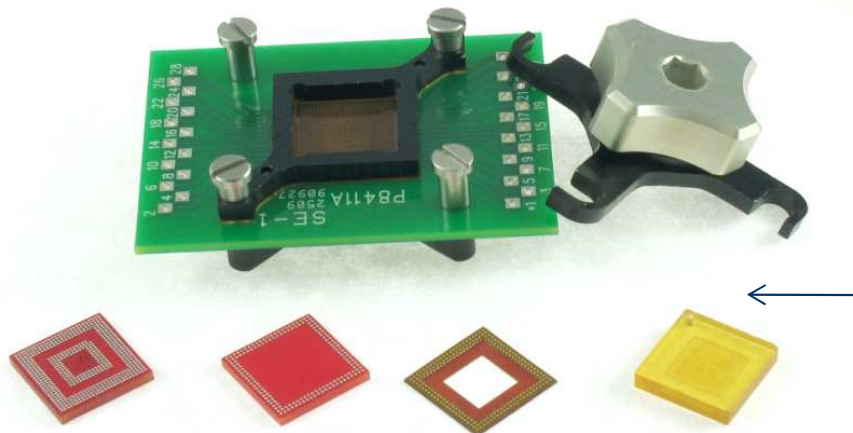
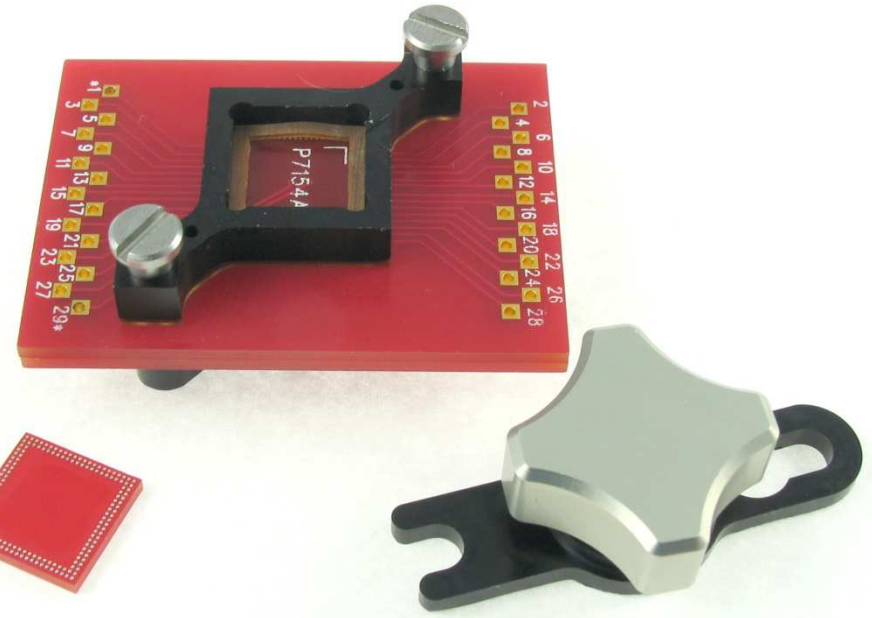


Multi-Level Socket using Elastomer Technology



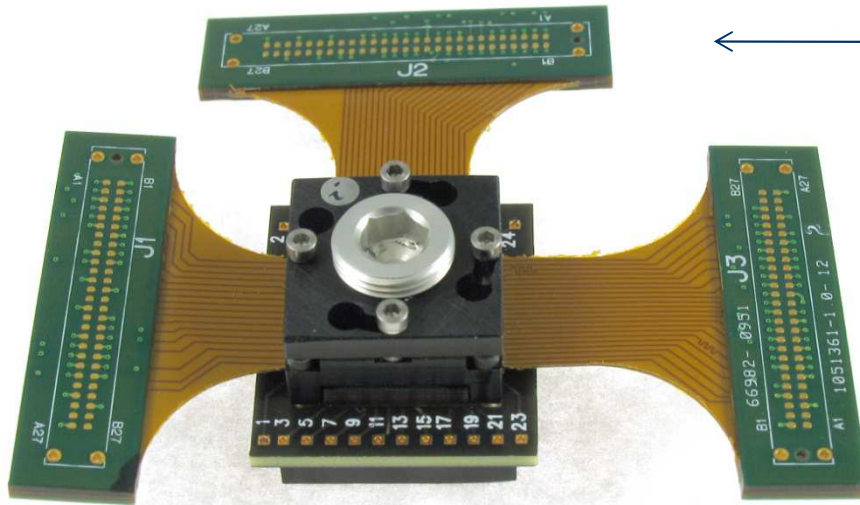
Two mounting hole socket, 12x12mm, 0.4mm pitch 515BGA processor with 12x12mm, 0.5mm pitch 168BGA memory – uses vertical cflex elastomer on top and bottom

Two mounting hole socket, 12x12mm, 0.4mm pitch 515BGA processor with 12x12mm, 0.5mm pitch 168BGA memory – uses straight elastomer on top and bottom



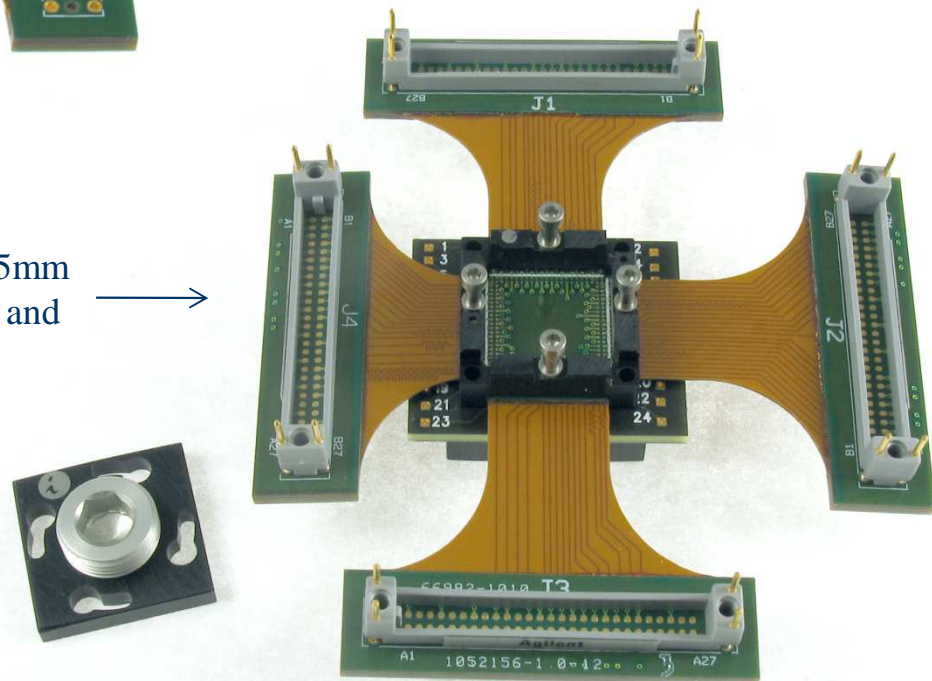
Two mounting hole socket, 12x12mm, 0.4mm pitch 515BGA processor with 12x12mm, 0.5mm pitch 168BGA memory – uses straight elastomer on top and angle elastomer on bottom

Multi-Level Socket with Agilent's Probe

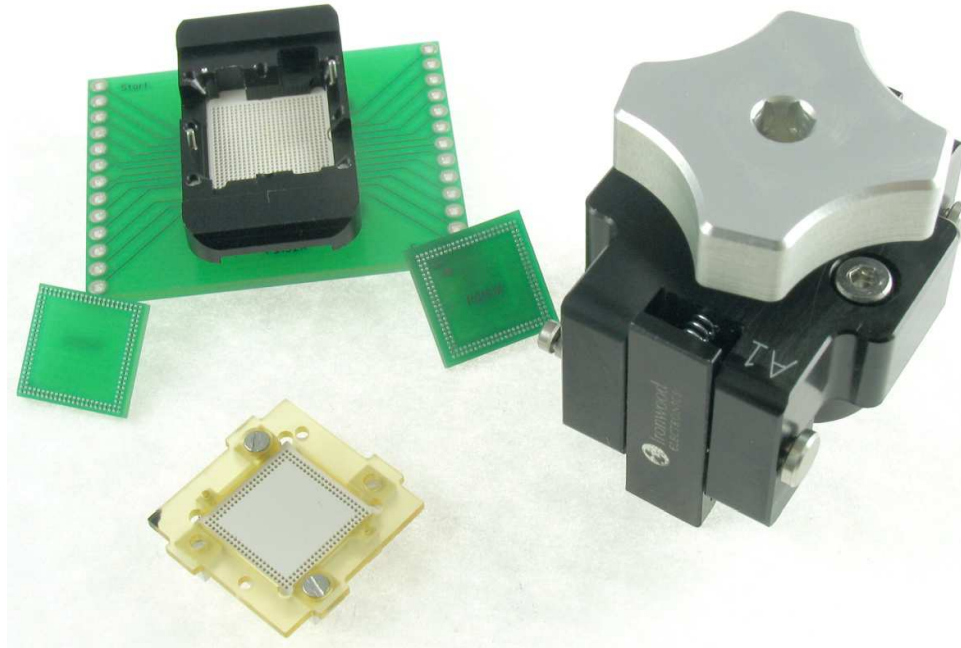


Multi level socket, 12x12mm, 0.4mm pitch 29x29 array, BGA processor with 12x12mm, 0.5mm pitch 168BGA memory soldered on to Agilent's memory probe

Multi level socket, 12x12mm, 0.5mm pitch 23x23 array, BGA memory and Agilent's memory probe

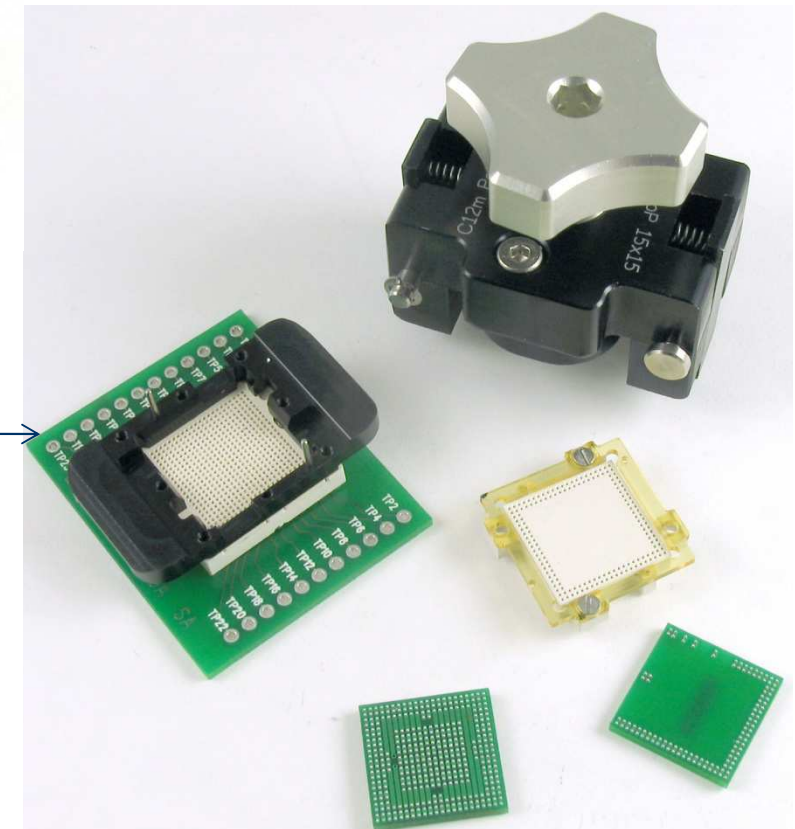


Multi-Level Socket using SBT Contact Technology

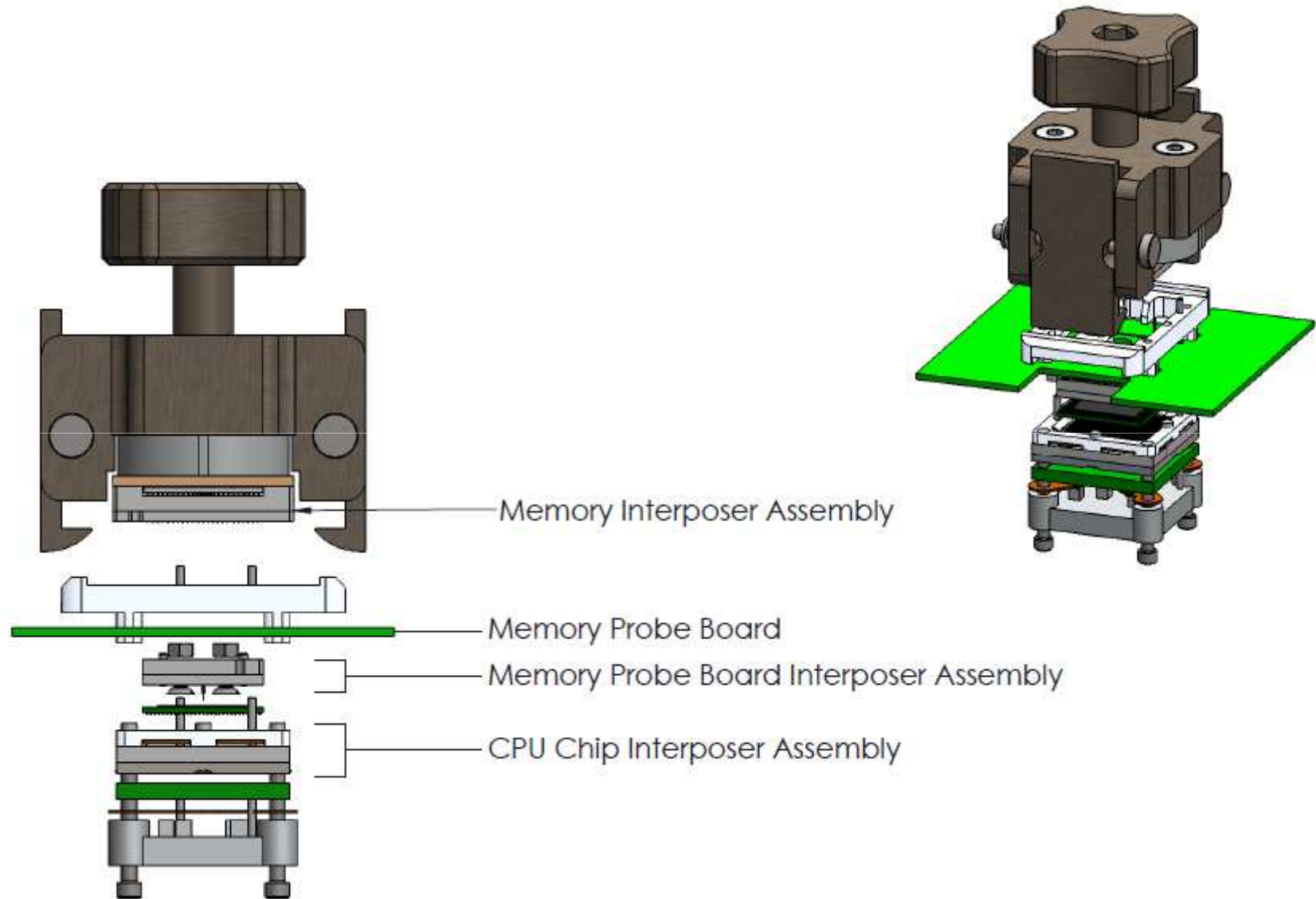


← Multi level socket, 13x13mm, 0.5mm pitch 25x25 array, BGA processor with 12x12mm, 0.5mm pitch 168BGA known good memory attached to clamshell lid for quick processor screening.

Multi level socket, 15x15mm, 0.65mm pitch 22x22 array, 384BGA processor with 15x15mm, 0.65mm pitch 112BGA known good memory attached to clamshell lid for quick processor screening.



Multi-Level Socket using SBT & Spring Pin Contact Technology



Custom Capability



- Custom socket designs in 2 days
- Match customer's PCB footprint
- Custom socket manufacturing in 10 days
- Multiple contactor technologies
- Heat sink simulation and design
- Contactor signal integrity simulation
- In-house automated optical inspection
- In-house machining
- Quick turn production

