

## CCC Study in Co-axial Socket

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### Why do the multiple probe CCC study in co-axial socket?

- Current Carrying Capacity (CCC) definition: Refers to probe or other contact's capability of maximum current going through without causing damages or deteriorating performance due to temperature raise caused by heat
- The current passing through the probe generates heat. This causes the cluster probe and socket temperature to rise.
- Study cluster probes' CCC at the test condition in coaxial socket power cavity.

### Testing principle

All probes are connected in series within the co-axial block by a PCB and supplied with a constant current. A thermocouple is used to measure the center probe temperature.

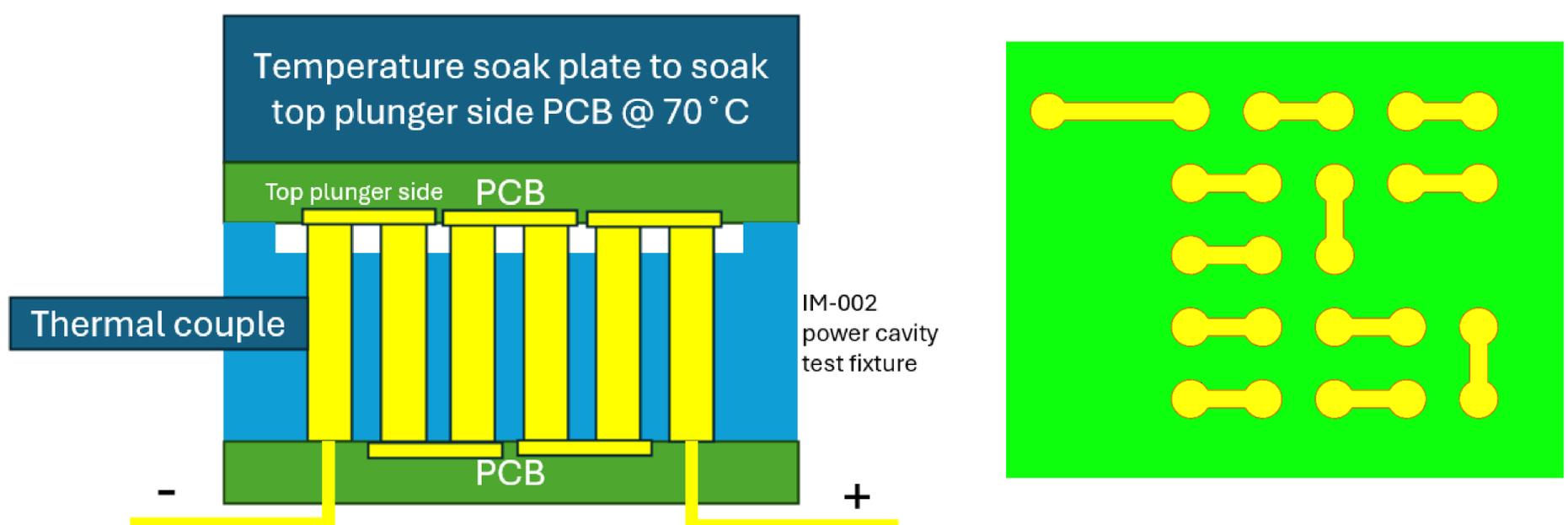


Fig.1. Testing principle

## Testing Set Up:

- Co-axial block: Insulating metal housing, 0.95mm pitch, patten 5x5 (23 probes).
- PCB press probes to test state and connect all probes in series
- Using heater control the PCB temperature

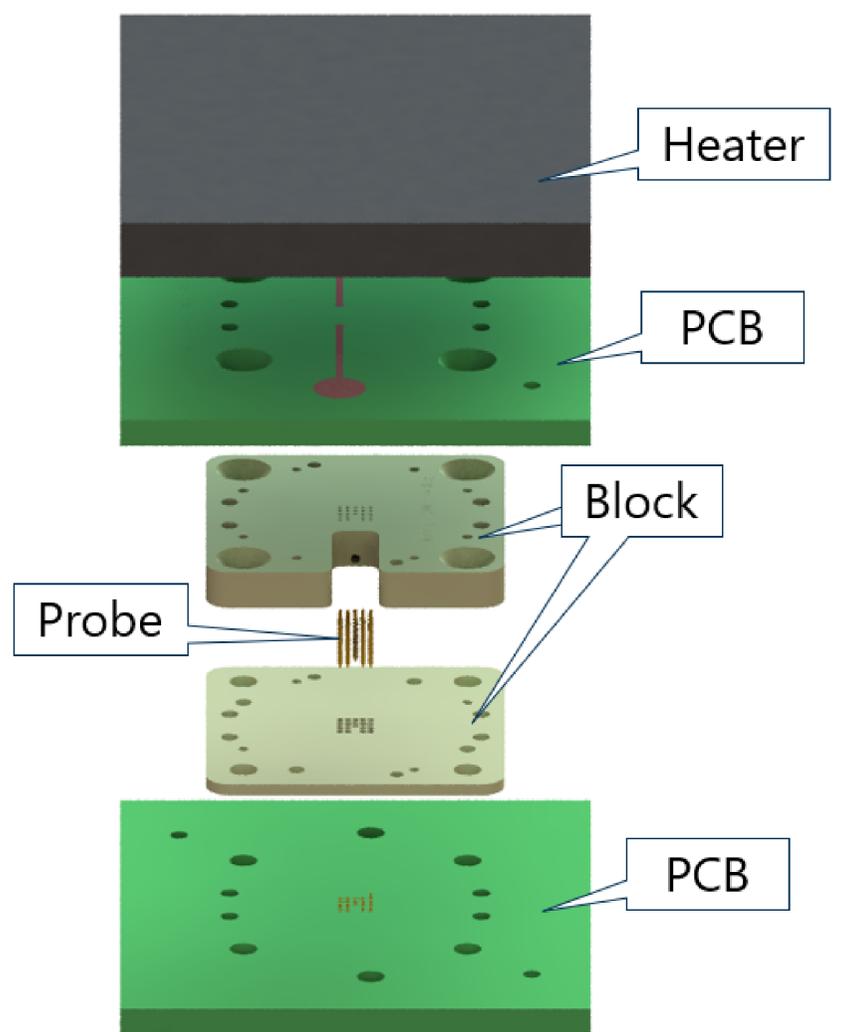


Fig.2. Testing set up

## Testing process:

The temperature-controlled power supply can control the PCB temperature. Once the PCB reaches the set temperature, apply a current to the probe according to the settings (DC Current: 0-5A (step 0.50A)), record the temperature changes.

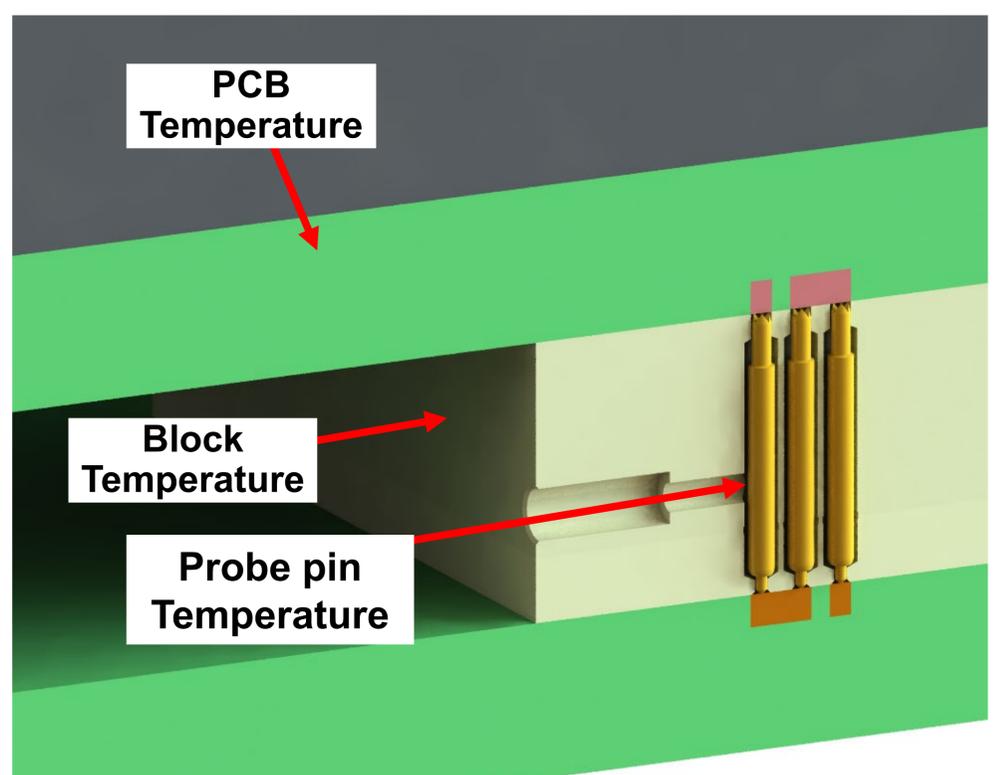
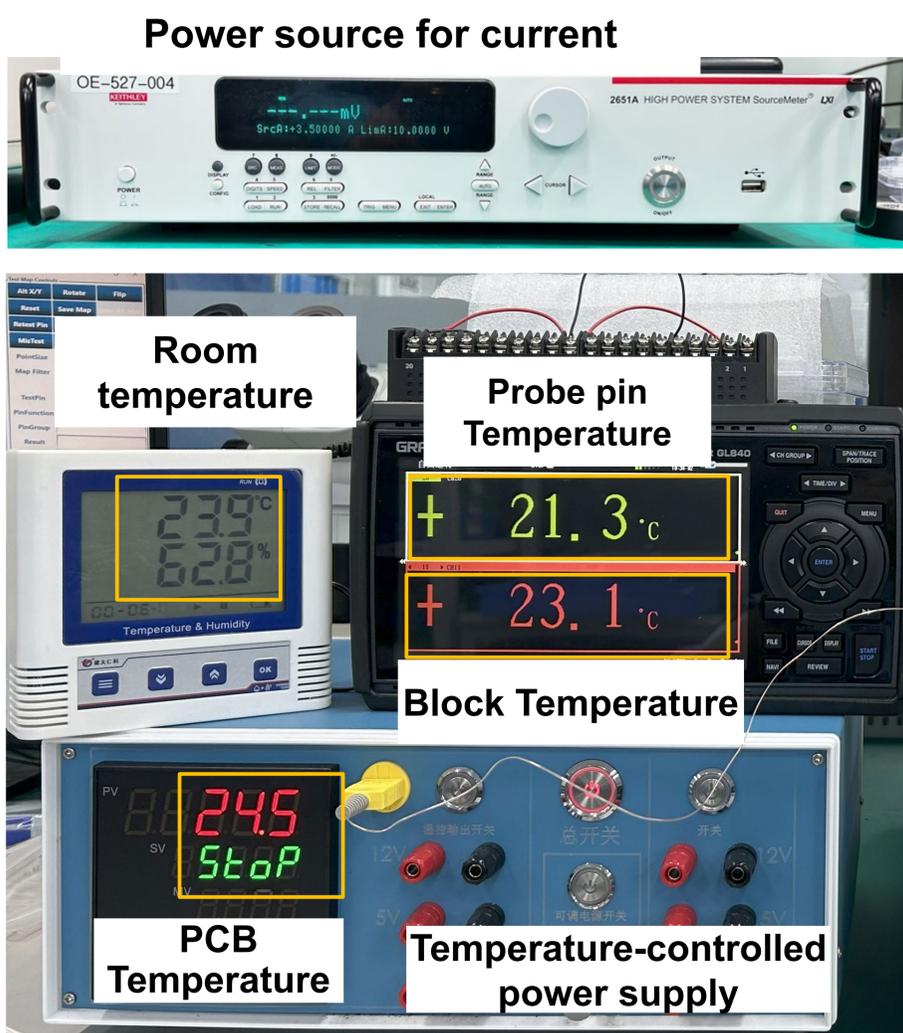


Fig.3. Testing process

## Test Summary

- The CCC T-rise result of this probe is 30°C @ 4A.
- T-rise of probe at 4A is  $137.8 - 105.2 = 32.6^\circ\text{C}$ , which is close to T-rise test result 30°C @ 4A.
- Block temperature is less than probe temperature, housing worked as cooling.
- Block & probe temp simulation is close matching experiment result, variance less 10%.

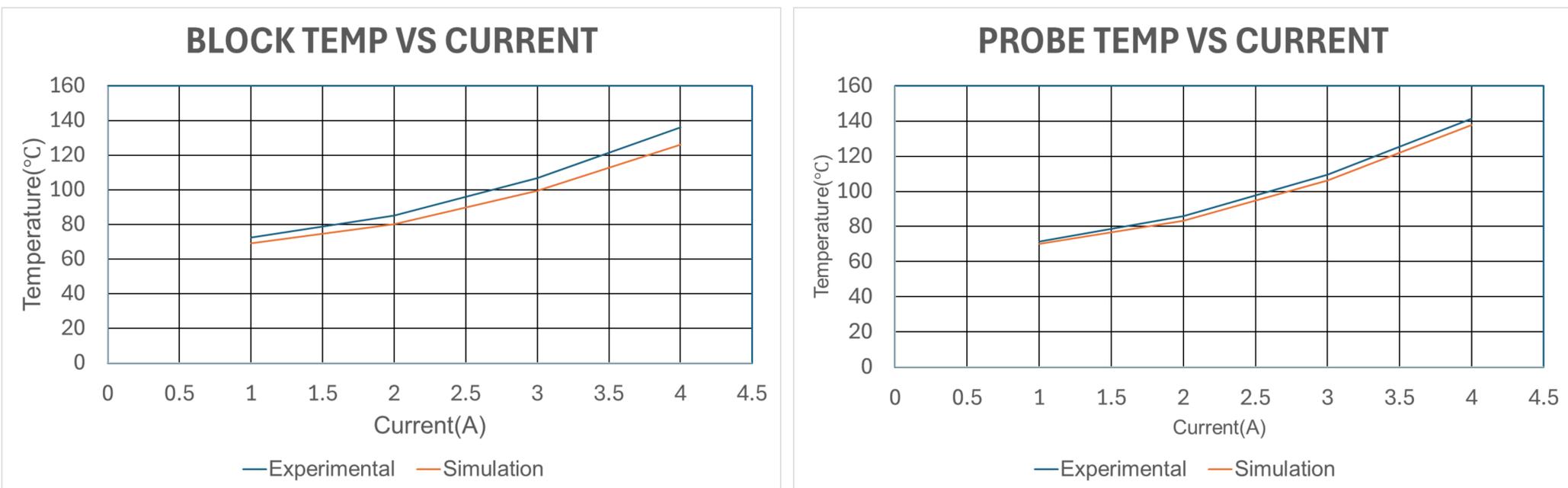


Fig.4. Testing result

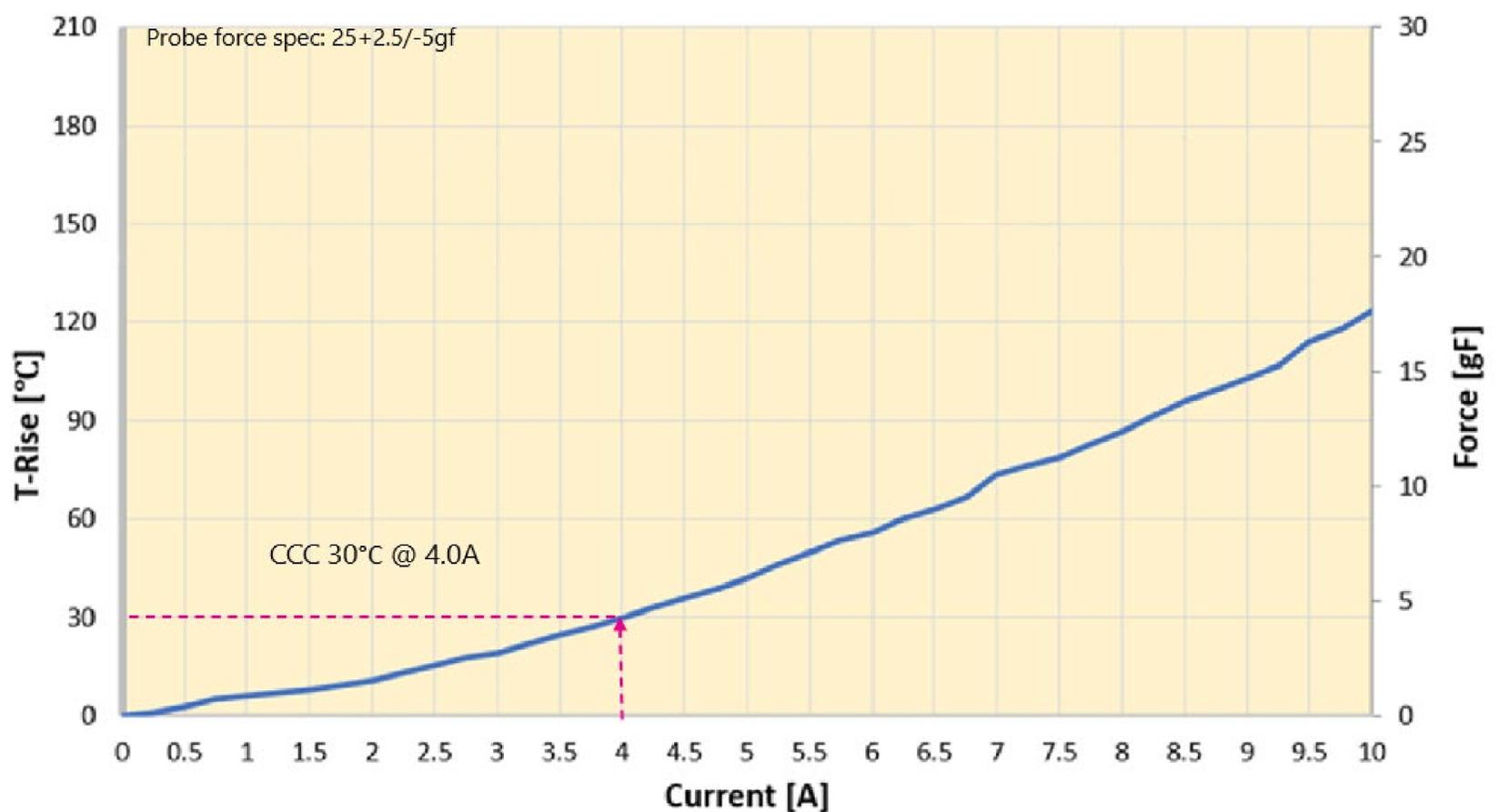


Fig.5. CCC of T-rise