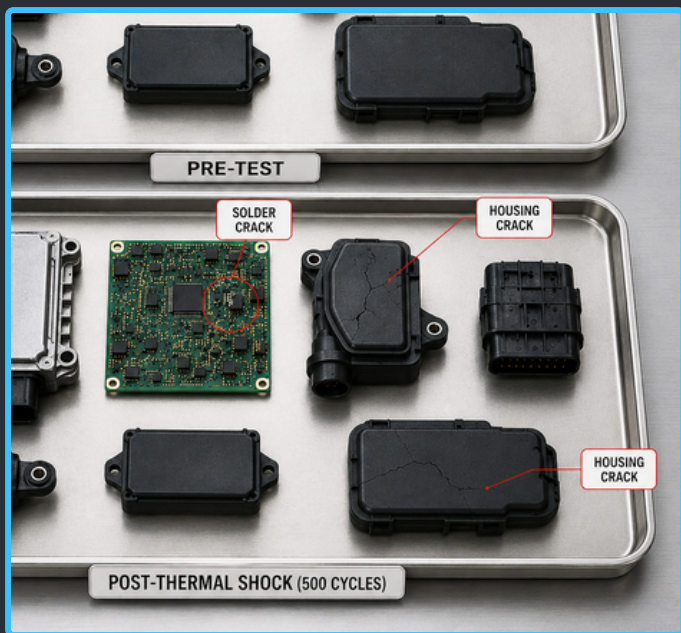


NEWSLETTER

August, 2026



Thermal Shock Testing: Finding Failure Before Your Customer Does

August, 2026 – A control module may pass every factory inspection, yet fail months later in service. The cause is often not a single extreme temperature, but repeated thermal expansion and contraction that gradually weakens solder joints, seals, and material interfaces. **The real question isn't whether a product survives -40°C or $+125^{\circ}\text{C}$, it's how many rapid temperature cycles it can withstand before failure.**

Thermal shock testing answers that question by repeatedly transferring specimens between controlled hot and cold chambers, accelerating years of thermal cycling into days while delivering repeatable, standards-compliant results.

Qualitest's QualiTSC™ Thermal Shock Test Chamber lineup offers two-zone and three-zone configurations from 50 to 500 liters, providing reliable, standards-compliant thermal shock testing for a wide range of product sizes and applications.

Product Highlight

Thermal Shock Chamber – Two-Zone

QualiTSC-2Z Series (50 to 500 L)

Feature/Advantages:

- **Temperature Recovery in Under 15 Minutes After Specimen Transfer:** Separately conditioned hot and cold zones remain at their setpoints, allowing rapid temperature recovery.
- **IEC 60068-2-14 Na and IEC 61747-5 compliant:** Transition times and dwell periods meet the two standards most often written into electronics qualification plans.
- **Energy-efficient Refrigeration:** Hot-gas defrost with VRF refrigeration reduces frost buildup and lowers energy consumption.
- **Advanced Programmable Controller:** TEMI 1500 controller with programmable test profiles, RS232, RS485, Ethernet, and EZNET remote monitoring.



Thermal Shock Chamber – Three-Zone

QualiTSC-3Z Series (50 to 500 L)

Feature/Advantages:

- **Stationary Specimen Design:** Air moves between hot and cold zones while the specimen remains fixed, eliminating mechanical shock and protecting sensitive samples.
- **Powered Testing Capability:** Fixed specimen position allows continuous power and instrumentation connections throughout the test cycle.
- **Long-Duration Operation:** Supports up to 1,000 frost-free cycles or 500 hours of continuous testing without defrost interruption.
- **Expanded Standards Compliance:** Meets JASO D014-4, EIAJ ED-2513B (Na), MIL-STD-883H, and MIL-STD-202G requirements.



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Thermal Shock Chamber – Horizontal Two-Zone

QualiHTSC-2Z Series (50 to 500 L)



Feature/Advantages:

- **Side-by-Side Compartments:** Both zones sit at working height, so a heavy assembly does not have to be lifted into an overhead chamber.
- **Recovery Under 15 minutes:** The same dual-zone conditioning as the vertical series, with airflow tuned for uniformity across a wider test space.
- **Broad Military and Automotive Coverage:** MIL-STD-810, MIL-STD-202, IEC 60068-2-14, ISO 16750, and JIS C 0020 for defense, automotive, and PCB qualification work.
- **Easier Fixturing and Instrumentation:** Horizontal access simplifies routing thermocouples and power leads to large samples.



QualiTrivia

A product can pass a temperature cycling test (IEC 60068-2-14 Test Nb) yet fail a thermal shock test (Test Na) at the same temperature limits. The difference isn't the temperature extremes—it's the transition time.

Rapid transfer creates steep thermal gradients and differential expansion that expose failures in solder joints, seals, adhesives, and bonded interfaces that gradual cycling may never reveal.



Qualitest USA

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Which Thermal Shock Chamber Matches Your Test Program?

BEST FOR	RECOMMENDED MODEL	WHY THIS IS THE BEST FIT?
Electronics and automotive parts needing the fastest transition and highest throughput	QualiTSC-2Z	Vertical basket transfer between pre-conditioned zones recovers setpoint in under 15 minutes, satisfying IEC 60068-2-14 Na transition limits on routine qualification runs.
Vibration-sensitive sensors, optics, and samples that must stay powered during the cycle	QualiTSC-3Z	The specimen stays fixed in a dedicated test zone while air is switched, so no mechanical impact is added, and cabling to a live unit under test stays undisturbed.
Large, heavy, or awkward assemblies where loading access decides the fixture	QualiHTSC-2Z	Side-by-side zones at working height remove the overhead lift, and MIL-STD-810 and MIL-STD-202 coverage suits defense and heavy automotive work.

Why Choose Qualitest



Global Standards Compliance:

Designed to meet IEC, MIL-STD, ISO, JIS, RTCA, and SAE thermal shock testing requirements, helping laboratories and manufacturers support international qualification and certification programs.



Energy-Efficient Refrigeration:

Advanced VRF refrigeration with hot-gas defrost minimizes frost buildup, maintains stable chamber performance, and reduces energy consumption during extended testing.



Flexible Chamber Configurations:

Choose from two-zone, three-zone, and horizontal chamber designs, all built on a common control platform with TEMI 1500, EZNET remote monitoring, and capacities from 50 to 500 L.



Scalable Lab Economics and Support:

From compact laboratory systems to full-size production chambers, Qualitest provides competitive pricing, flexible financing options, and global calibration and service support to help laboratories grow with confidence.

Ready to Qualify Against the Transition, Not Just the Temperature?

The QualiTSC lineup gives electronics, automotive, aerospace, and defense labs a repeatable, standards-referenced thermal shock program, whether the specimen is a PCB, a powered sensor, or a full assembly on a pallet.

Explore the full lineup here: <https://www.worldoftest.com/thermal-shock-chamber/>

For guidance on selecting the right chamber architecture, volume, and temperature range for your standard, contact: sales@qualitest-inc.com

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