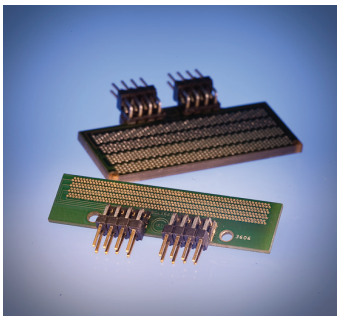


Highly Accelerated Thermal Shock (HATS™) Testing

An Exclusive Service Provider for North America



HATS coupons can be electrically tested with other thermal shock technologies



Placing the coupons inside a HATS tester



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What is HATS™ testing?

HATS™ Plated-through Hole Reliability Testing Technology has been recognized and utilized since 2003. Over the years, a number of papers have been published regarding the technology and its benefits.

HATS™ coupons are daisy chain coupons and can be electrically tested with other thermal shock technologies that electrically test daisy chains, including dual chamber. The HATS™ tester uses high speed air as the heat transfer (fluid) mechanism to heat and cool the test coupons along with a Keithley 2400 system meter to make accurate and repeatable 4-wire resistance measurements of the coupons.

Other technologies use different mechanisms like oil, nitrogen, sand or internal conduction to transfer heat to the coupons which results in different transfer rates. Alternative thermal shock methods utilize electrical measurement techniques (2-wire, 3-wire, etc.) and meters/switching systems that may not have the accuracy and repeatability of the HATS™ tester. These differences mean that HATS™ testing technology and cannot be directly compared to other non-dual-chamber thermal shock technologies. HATS™ testers use air as the heat transfer mechanism just like the tried and true method used by dual chamber thermal shock testers for the last 50+ years.

HATS™ testing requires a HATS™ tester. HATS™ testers can test 36 (4 net) coupons for a total of 144 daisy chain test nets per test run. Doing 1000 cycles of that many coupons/nets with other technologies can take weeks if not months due to their limited capacity. The HATS™ tester does 1000 cycles of 36 coupons/144 nets in less than a week. Carefully research the methodologies out there before you decide.

What are the benefits of HATS™ testing with NTS?

- ▶ Temperature cycles from -55C to +160C
- ▶ 36 Coupon chamber capacity
- ▶ Automatic generation of through-hole, blind, buries and stacked via structures
- ▶ Reduced testing costs over dual-chamber systems
- ▶ Reduce cycle times by 50%-80%
- ▶ Detailed test report including notched-box plots and Weibull analysis
- ▶ Test coupons automatically generated and artwork sent via e-mail

About NTS

National Technical Systems (NTS) provides test, inspection and certification services to help clients build better, stronger, safer, more reliable products and bring those products to market quickly and efficiently. Over the last 50 years, through a combination of acquisitions, innovations and organic growth we have grown to become one of the largest commercial test laboratory networks in North America. Our capabilities span a very wide spectrum, covering environmental, dynamics, EMC, wireless, product safety, materials, ballistics and more. NTS engineers and technicians have extensive knowledge of current test and conformity requirements, both domestic and international over a range of industries including aerospace, defense, telecom and energy.