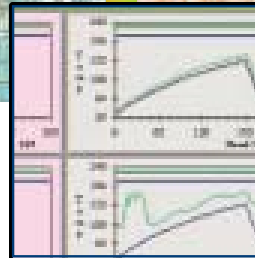
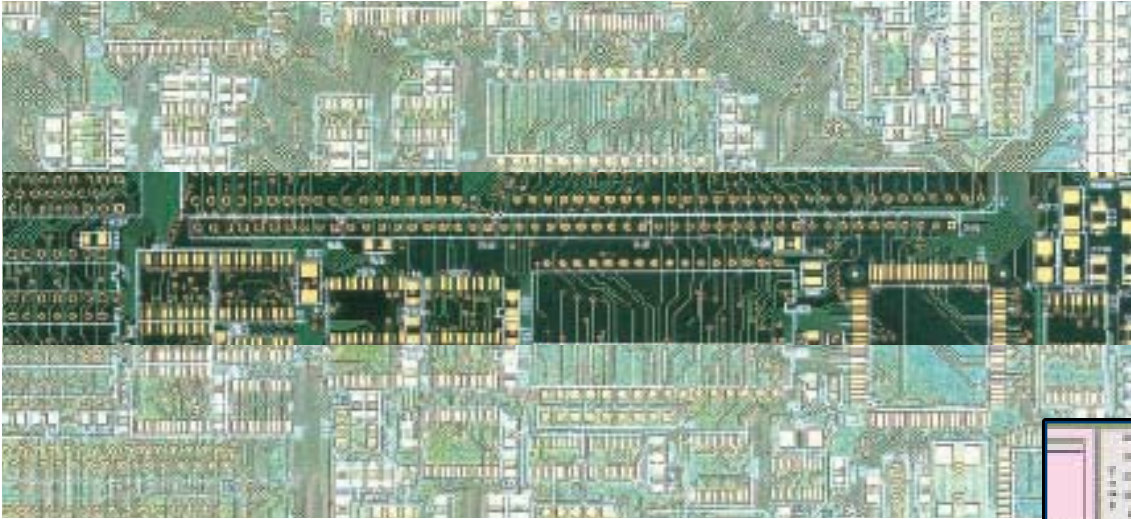


# Interconnect Stress Test (IST) and DELAM Equipment



*Measuring the Reliability of the Interconnected  
Structures and the Dielectric Material in  
Printed Wire Boards*

# PWVB

*Fast*

*Excellent R&R*

*Easy to Characterize*

*Cost Effective*

*Reduces the need for  
Microsectioning*

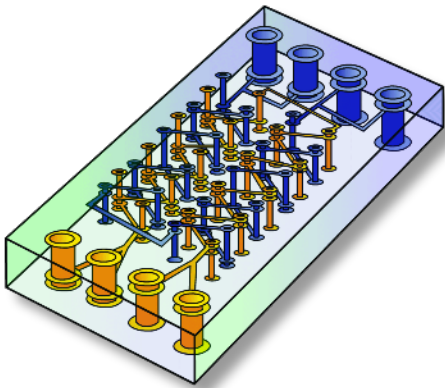
*Effective Data Analysis*

*Reliability Testing of  
Copper Interconnections  
and Material*

[pwbcorp.com](http://pwbcorp.com)

# IST Systems

## Interconnect Stress



*Interconnect Stress Test (IST) is now established as the industry accepted test methodology for the reliability assessment of Printing Wiring Board (PWB) interconnections. Because PWB industry wide studies over the last twenty years have concluded that compared to traditional methods, (thermal oven/liquid to liquid/sand bath/solder float), IST methods are:*

- *Faster*
- *Repeatable & Reproducible*
- *Easy to Characterize*
- *Simulate the products expected Assembly & Rework Conditions*
- *Cost Effective*
- *Reduces the need for Microsectioning*
- *Simplify Data Analysis & Interpretation*

## Outstanding Interconnect Test Method

IST is an accelerated stress test method that overcomes the limitations of thermal oven or liquid/liquid methods. IST has the capability of effectively/rapidly quantifying the integrity of both the Plated Through Hole (PTH) and the unique ability to identify the presence and levels of post separations within the multilayer board. The plated barrels and inner layer junctions are “exercised” until the initial failure mode/mechanism is uncovered. The data is recorded as IST cycles to failure.

*This test method is compliant to:*

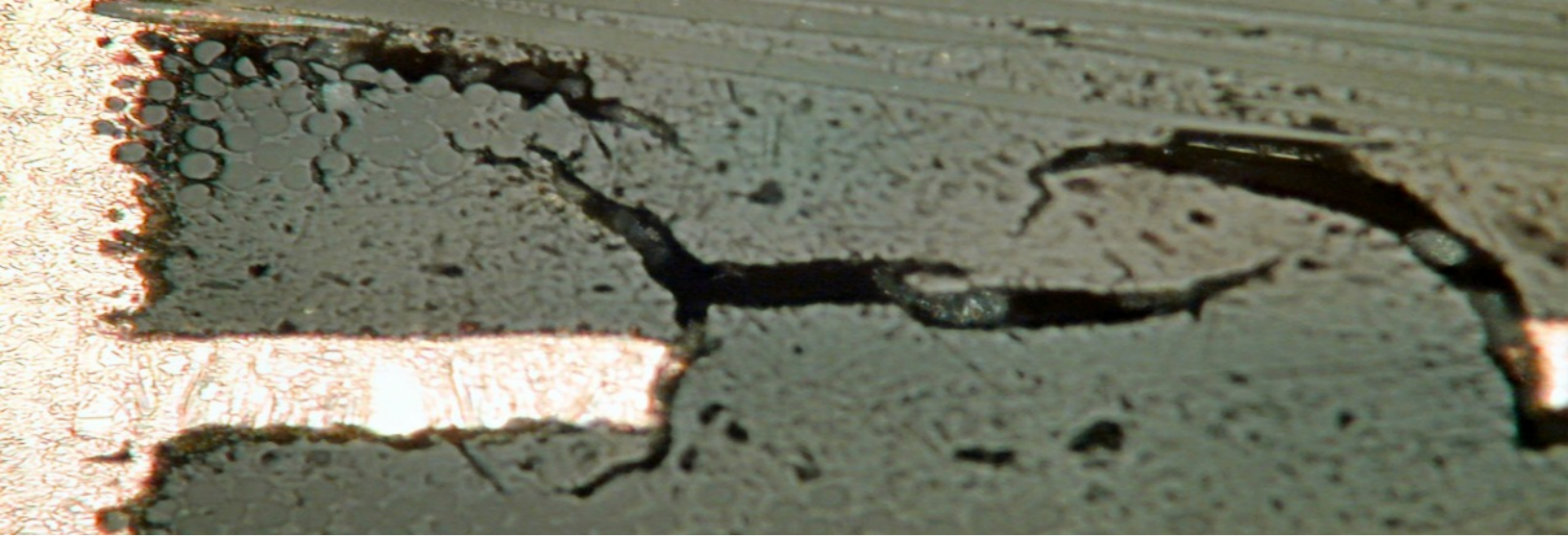
**IPC TM 650:**  
**2.6.26 DC Current Induced Thermal Cycling**  
**2.6.27 Thermal Stress, Convection Reflow**  
**Assembly Simulaton**



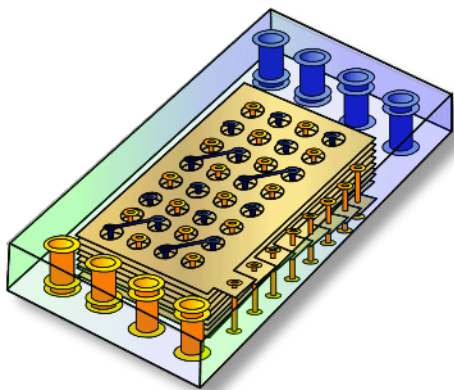
IST is able to stop testing within seconds of a failure occurring thus allowing a more detailed analysis of the failure mode.

Applying a low current and observing the coupon with a thermal camera identifies the precise PTH that is damaged permitting effective failure analysis

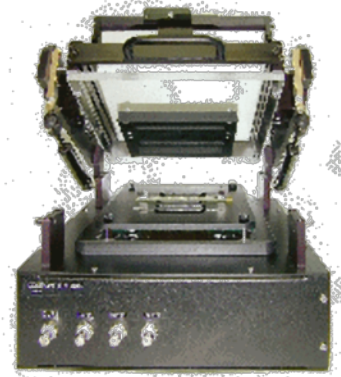




## DELAM Material Testing



PWB Interconnect Solutions Inc. is an advanced technology company which offers a revolutionary method for assessing the integrity of PWB materials. This new material measurement technology has the unique ability to identify the presence and severity of material robustness. Using capacitance measurements between the dielectric layer, material damage can be readily found. A microsection is then processed to confirm or refute the presence of material damage. The type of material damage found includes adhesive delamination, cohesive fractures, crazing and material decomposition.



### Revolutionary Material Test Method

IST Technology is capable of providing information on the PWB construction by the use of specifically design DELAM circuits. Capacitance is measured between these circuits to establish consistency or variability. Using this method one can characterize the construction of panels and find material degradation after assembly and/or rework or at the end of test.

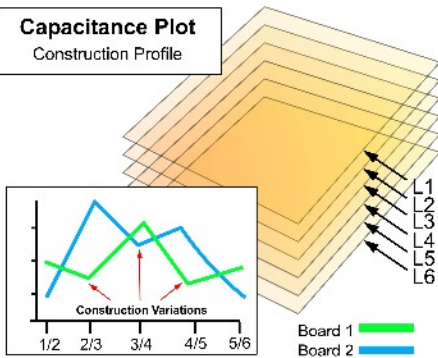
- *DELAM removes the Ambiguity*
- *DELAM Accelerates Throughput*
- *DELAM Reduces Microsection Costs*
- *DELAM Improves Customer Satisfaction*

The combination of IST technology DELAM are the first test systems capable of testing the quality of interconnections and various types of material delamination at the same time.

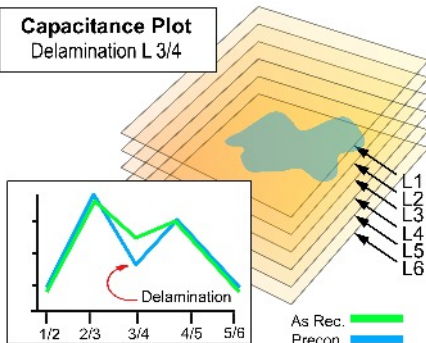
***This test method is compliant to:***  
***IPC TM 650, 2.3.35 - Capacitance of Printed Board Substrates After Exposure to Assembly, Rework, and/or Reliability Tests (Draft Pending)***

Measuring the substrate before, during and after simulated assembly/rework signify a capacitance change that is considered sufficient to confirm a material failure and it's location. A microsection is a usual process to confirm the presence of material damage.

**Capacitance Plot**  
Construction Profile



**Capacitance Plot**  
Delamination L 3/4



# IST Test Services

## Effectively Quantify Your PWB and Material Reliability

Interconnect Stress Testing Services are a fast and economic alternative to oven based reliability testing. Result are obtained rapidly and cost effectively compared to oven testing.

### How Do I Start

Select a coupon design that is available on line at <http://www.pwbcorp.com> or submit a request for a custom coupon to [PWB@pwbcorp.com](mailto:PWB@pwbcorp.com). Add an IST coupon design on your PWB production panel. Fabricate the coupons and send in to one of the IST Service Centres. You will receive a report in days.

### The Definitive Solution for PWB Reliability Testing

Comprehensive studies have proven IST to be a quantifiable, cost effective method for reliability testing. Whether you are a PWB fabricator, supplier to PWB fabricators, manufacturer, or OEM, an IST test can give you fast unequivocal results regarding your PWB reliability.

### Reliability Testing Made Easy

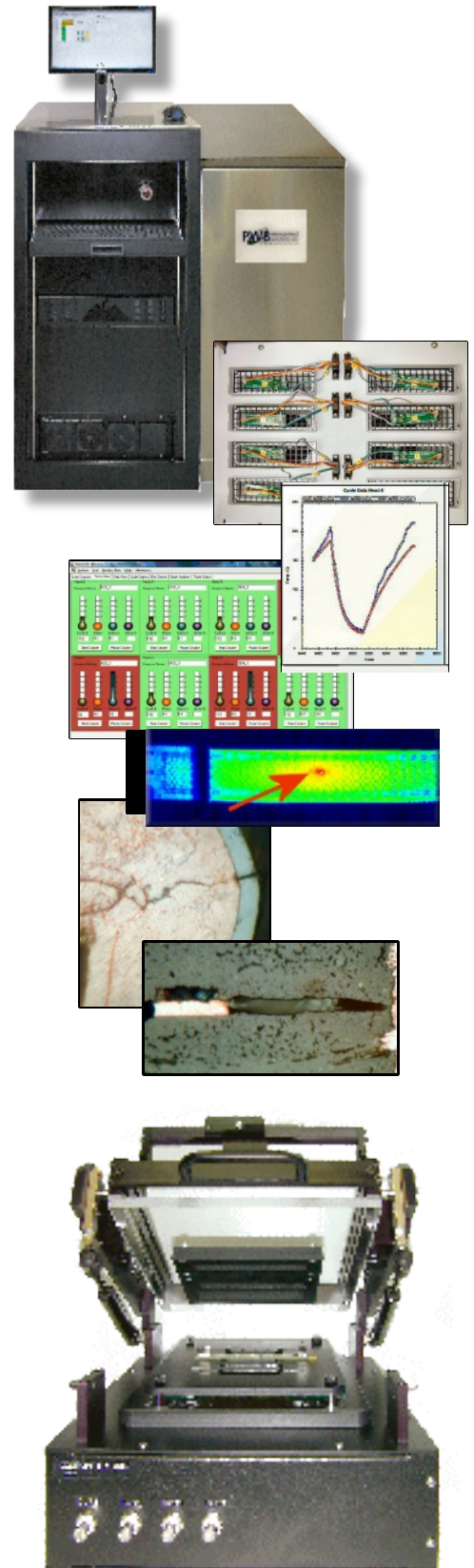
- **Results in Days not Weeks**
- **Testing Copper Interconnections**
- **Testing Material Integrity**
- **Conformance & DOE Testing**

### IST and Lead Free

Double sided reflow and rework are undoubtedly the toughest environment that most PWBs will encounter. With the thermal excursions required in lead free assembly (260°C) it becomes essential to understand the long term performance of the circuit board. IST tests the boards ability of survive assembly and rework and predict how long the PWB will survive in the field.

### IST Services Include

The IST Services include IST testing, DELAM evaluations of Materials, Conductive Anodic Filament (CAF) testing, Material Analysis (TMA, DMA), Failure and Root Cause Analysis, and Acceleration Studies to determine product life in the field. The services include Compliance, Design of Experiment, and High Temperature testing. What IST Services can do is to test the robustness your PTH, Internal Interconnections, Buried and Blind Via, Microvia (stacked or staggered), and Printed Microvia (ALIVH) interconnections. Testing to rank process, fabricators, chemistries, constructions, materials and many more variables. IST Test Services include consulting to help you or your vendor produce the best, most robust PWBs possible.



**Contact PWB Interconnect Solutions  
for Test Services or Equipment**

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Nepean, Ontario  
K2H 9C1, **Canada**

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F: 613 596 - 2200  
E: [pwb@pwbcorp.com](mailto:pwb@pwbcorp.com)  
W: [http:// www.pwbcorp.com](http://www.pwbcorp.com)