

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

**Semiconductor devices – Mechanical and climatic test methods –  
Part 15: Resistance to soldering temperature for through-hole mounted devices**

**Dispositifs à semiconducteurs – Méthodes d'essai mécaniques et climatiques –  
Partie 15: Résistance à la température de soudage pour dispositifs par trous  
traversants**



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# INTERNATIONAL ELECTROTECHNICAL COMMISSION

## SEMICONDUCTOR DEVICES – MECHANICAL AND CLIMATIC TEST METHODS –

### Part 15: Resistance to soldering temperature for through-hole mounted devices

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International Standard IEC 60749-15 has been prepared by IEC technical committee 47: Semiconductor devices.

This second edition cancels and replaces the first edition published in 2003 and constitutes a technical revision. The significant changes with respect from the previous edition include:

- editorial change in the scope,
- addition of lead-free solder chemical composition specification.

The text of this standard is based on the following documents:

FDIS	Report on voting
47/2067/FDIS	47/2078/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 60749 series, under the general title *Semiconductor devices - Mechanical and climatic test methods*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

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## **SEMICONDUCTOR DEVICES – MECHANICAL AND CLIMATIC TEST METHODS –**

### **Part 15: Resistance to soldering temperature for through-hole mounted devices**

#### **1 Scope**

This part of IEC 60749 describes a test used to determine whether encapsulated solid state devices used for through-hole mounting can withstand the effects of the temperature to which they are subjected during soldering of their leads by using wave soldering or a soldering iron.

In order to establish a standard test procedure for the most reproducible methods, the solder dip method is used because of its more controllable conditions. This procedure determines whether devices are capable of withstanding the soldering temperature encountered in printed wiring board assembly operations, without degrading their electrical characteristics or internal connections.

This test is destructive and may be used for qualification, lot acceptance and as a product monitor.

This test is, in general, in conformity with IEC 60068-2-20 but, due to specific requirements of semiconductors, the clauses of this standard apply.

#### **2 General**

The heat is conducted through the leads into the device package from solder heat at the reverse side of the board. This procedure does not simulate wave soldering or reflow heat exposure on the same side of the board as the package body.

#### **3 Test apparatus**

##### **3.1 Solder pot**

A solder pot of sufficient size to contain at least 1 kg of solder shall be used. The solder pot dimensions shall allow full immersion of the leads without touching the bottom. The apparatus shall be capable of maintaining the solder at the temperature specified in Table 1.

##### **3.2 Dipping device**

A mechanical dipping device shall be used that is capable of controlling the rates of immersion and emersion of the leads and providing the dwell time as specified in Table 1.

##### **3.3 Heatsinks or shielding**

If applicable, heatsinks or shielding shall be attached to the devices prior to the test and shall be as specified in the relevant specification.