INTERNATIONAL STANDARD

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Environmental testing –

Part 2-58:
Tests – Test Td:
Test methods for solderability, resistance to dissolution of metallization and to soldering heat of surface mounting devices (SMD)

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FOREWORD

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International Standard IEC 60068-2-58 has been prepared by IEC technical committee 91: Electronics assembly technology.

This edition includes the following significant technical changes with respect to the previous edition:

- expansion of the scope so that it includes lead-free solder alloy in addition to the existing tin-lead eutectic or near eutectic solder alloy (the structure of the document has been changed accordingly);
- addition of the definitions of "solderability" and "resistance to soldering heat" for SMDs;
- specification of the reflow temperature profiles for the resistance to soldering heat using lead-free solder;
- addition of an Annex C enabling a quick overview of the test conditions.

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

FDIS	Report on voting
91/447/FDIS	91/459/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.

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

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

A bilingual version may be issued at a later date.

ENVIRONMENTAL TESTING –

Part 2-58: Tests – Test Td: Test methods for solderability, resistance to dissolution of metallization and to soldering heat of surface mounting devices (SMD)

1 Scope and object

This part of IEC 60068 outlines test Td, applicable to surface mounting devices (SMD), which are intended to mount on substrates. This standard provides the standard procedures for solder alloys containing lead (Pb) and for lead-free solder alloys.

This standard provides standard procedures for determining the solderability and resistance of soldering heat to lead-free solder alloys.

This standard provides standard procedures for determining the solderability, dissolution of metallization (see B.3.3) and resistance of soldering heat to solder alloys which are eutectic or near eutectic tin lead solders.

The procedures in this standard include the solder bath method and reflow method. The solder bath method is applicable to the SMD designed for flow soldering and the SMD designed for reflow soldering when the solder bath (dipping) method is appropriate. The reflow method is applicable to the SMD designed for reflow soldering, to determine the suitability of SMD for reflow soldering and when the solder bath (dipping) method is not appropriate.

The objective of this standard is to ensure that component lead or termination solderability meets the applicable solder joint requirements of IEC 61191-2 using each of the soldering methods specified in IEC 61760-1. In addition, test methods are provided to ensure that the component body can resist against the heat load to which it is exposed during soldering.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60068-1:1988, *Environmental testing – Part 1: General and guidance*

IEC 60068-2-20:1979, *Environmental testing – Part 2: Tests – Test T: Soldering*

IEC 60194:1999, *Printed board design, manufacture and assembly – Terms and definitions*

IEC 60749-20:2002, *Semiconductor devices – Mechanical and climatic test methods – Part 20: Resistance of plastic-encapsulated SMDs to the combined effect of moisture and soldering heat*

IEC 61190-1-1:2002, *Attachment materials for electronic assembly – Part 1-1: Requirements for soldering fluxes for high-quality interconnections in electronic assembly*

IEC 61190-1-2:2002, *Attachment materials for electronic assembly – Part 1-2: Requirements for solder pastes for high-quality interconnections in electronic assembly*

IEC 61190-1-3:2002, *Attachment materials for electronic assembly – Part 1-3: Requirements for electronic grade solder alloys and fluxed and non-fluxed solid solders for electronic soldering applications*

IEC 61191-2:1998, *Printed board assemblies – Part 2: Sectional specification – Requirements for surface mount soldered assemblies*

IEC 61249-2-7:2002, *Materials for printed boards and other interconnecting structures – Part 2-7: Reinforced base materials clad and unclad – Epoxide woven E-glass laminated sheet of defined flammability (vertical burning test), copper-clad*

IEC 61760-1:1998, *Surface mounting technology – Part 1: Standard method for the specification of surface mounting components (SMDs)*