

**Surface mounting technology - Part 3: Standard method  
for the specification of components for Through Hole  
Reflow (THR) soldering**

EVS

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 61760-3:2010 sisaldab Euroopa standardi EN 61760-3:2010 ingliskeelset teksti.</p> <p>Standard on kinnitatud Eesti Standardikeskuse 31.05.2010 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.</p> <p>Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 23.04.2010.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 61760-3:2010 consists of the English text of the European standard EN 61760-3:2010.</p> <p>This standard is ratified with the order of Estonian Centre for Standardisation dated 31.05.2010 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.</p> <p>Date of Availability of the European standard text 23.04.2010.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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ICS 31.190

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**Surface mounting technology -  
Part 3: Standard method for the specification of components  
for Through Hole Reflow (THR) soldering  
(IEC 61760-3:2010)**

Technique du montage en surface -  
Partie 3: Méthode normalisée relative  
à la spécification des composants pour  
le brasage par refusion à trous traversants  
(THR, Through Hole Reflow)  
(CEI 61760-3:2010)

Oberflächenmontagetechnik -  
Teil 3: Genormtes Verfahren  
zur Spezifizierung  
von Durchsteckmontage-Bauelementen  
für das Aufschmelzlöten (THR)  
(IEC 61760-3:2010)

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European Committee for Electrotechnical Standardization  
Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

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## Foreword

The text of document 91/856/CDV, future edition 1 of IEC 61760-3, prepared by IEC TC 91, Electronics assembly technology, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61760-3 on 2010-04-01.

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The following dates were fixed:

- |  |       |            |
|--|-------|------------|
| – latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement | (dop) | 2011-01-01 |
| – latest date by which the national standards conflicting with the EN have to be withdrawn   | (dow) | 2013-04-01 |

Annex ZA has been added by CENELEC.

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## Endorsement notice

The text of the International Standard IEC 61760-3:2010 was approved by CENELEC as a European Standard without any modification.

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## Annex ZA (normative)

### Normative references to international publications with their corresponding European publications

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.

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60062	-	Marking codes for resistors and capacitors	EN 60062	-
IEC 60068	Series	Environmental testing	EN 60068	Series
IEC 60068-2-20	-	Environmental testing - Part 2-20: Tests - Test T: Test methods for solderability and resistance to soldering heat of devices with leads	EN 60068-2-20	-
IEC 60068-2-21	-	Environmental testing - Part 2-21: Tests - Test U: Robustness of terminations and integral mounting devices	EN 60068-2-21	-
IEC 60068-2-45 + A1	1980 1993	Environmental testing - Part 2: Tests - Test Xa and guidance: Immersion in cleaning solvents	EN 60068-2-45 + A1	1992 1993
IEC 60068-2-58	-	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)	EN 60068-2-58	-
IEC 60068-2-77	-	Environmental testing - Part 2-77: Tests - Test 77: Body strength and impact shock	EN 60068-2-77	-
IEC 60068-2-82	-	Environmental testing - Part 2-82: Tests - Test XW1: Whisker test methods for electronic and electric components	EN 60068-2-82	-
IEC 60194	-	Printed board design, manufacture and assembly - Terms and definitions	EN 60194	-
IEC 60286	Series	Packaging of components for automatic handling	EN 60286	Series
IEC 60286-3	-	Packaging of components for automatic handling - Part 3: Packaging of surface mount components on continuous tapes	EN 60286-3	-
IEC 60286-4	-	Packaging of components for automatic handling - Part 4: Stick magazines for electronic components encapsulated in packages of form E and G	EN 60286-4	-

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60286-5	-	Packaging of components for automatic handling - Part 5: Matrix trays	EN 60286-5	-
IEC 60749-20	-	Semiconductor devices - Mechanical and climatic test methods - Part 20: Resistance of plastic encapsulated SMDs to the combined effect of moisture and soldering heat	EN 60749-20	-
IEC 61760-2	-	Surface mounting technology - Part 2: Transportation and storage conditions of surface mounting devices (SMD) - Application guide	EN 61760-2	-
IEC 62090	-	Product package labels for electronic components using bar code and two-dimensional symbologies	EN 62090	-
ISO 8601	-	Data elements and interchange formats - Information interchange - Representation of dates and times	-	-

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## SURFACE MOUNTING TECHNOLOGY –

**Part 3: Standard method for the specification of components for through hole reflow (THR) soldering**

## FOREWORD

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International Standard IEC 61760-3 has been prepared by IEC technical committee 91: Electronics assembly technology.

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

CDV	Report on voting
91/856/CDV	91/898/RVC

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 of the IEC 61760 series, under the general title *Surface mounting technology* 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 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.

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## **SURFACE MOUNTING TECHNOLOGY –**

### **Part 3: Standard method for the specification of components for through hole reflow (THR) soldering**

#### **1 Scope and object**

This part of IEC 61760 gives a reference set of requirements, process conditions and related test conditions to be used when compiling specifications of electronic components that are intended for usage in through hole reflow soldering technology.

The object of this standard is to ensure that components with leads intended for through hole reflow and surface mounting components can be subjected to the same placement and mounting processes. Hereto, this standard defines test and requirements that need to be part of any component generic, sectional or detail specification, when through hole reflow soldering is intended. Further this standard provides component users and manufacturers with a reference set of typical process conditions used in through hole reflow soldering technology.

#### **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 60062, *Marking codes for resistors and capacitors*

IEC 60068 (all parts), *Environmental testing*

IEC 60068-2-20, *Environmental testing – Part 2-20: Tests – Test T: Test methods for solderability and resistance to soldering heat of devices with leads*

IEC 60068-2-21, *Environmental testing – Part 2-21: Tests – Test U: Robustness of terminations and integral mounting devices*

IEC 60068-2-45:1980, *Basic environmental testing procedures – Part 2-45: Tests – Test XA and guidance: Immersion in cleaning solvents*  
Amendment 1:1993

IEC 60068-2-58, *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)*

IEC 60068-2-77, *Environmental testing – Part 2-77: Tests – Body strength and impact shock*

IEC 60068-2-82, *Environmental testing – Part 2-82: Tests – Test XW<sub>1</sub>: Whisker test methods for electronic and electric components*

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

IEC 60286 (all parts), *Packaging of components for automatic handling*

IEC 60286-3, *Packaging of components for automatic handling – Part 3: Packaging of surface mount components on continuous tapes*

IEC 60286-4, *Packaging of components for automatic handling – Part 4: Stick magazines for electronic components encapsulated in packages of form E and G*

IEC 60286-5, *Packaging of components for automatic handling – Part 5: Matrix trays*

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

IEC 61760-2, *Surface mounting technology – Part 2: Transportation and storage conditions of surface mounting devices (SMD) – Application guide*

IEC 62090, *Product package labels for electronic components using bar code and two-dimensional symbolologies*

ISO 8601, *Data elements and interchange formats – Information interchange – Representation of dates and times*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60194 and the following apply.

#### 3.1

##### **terminal pitch**

distance between the terminals of the component, either uniformly distributed or specifically defined

#### 3.2

##### **dewetting**

condition that results when molten solder coats a surface and then recedes to leave irregularly-shaped mounds of solder that are separated by areas that are covered with a thin film of solder and with the basis metal not exposed

#### 3.3

##### **dissolution of metallization**

process of dissolving metal or a plated metal alloy, usually by introduction of chemicals

NOTE For the purpose of this document standard, the dissolution of metallization also includes dissolution by exposure to molten solder.

#### 3.4

##### **pick-up force**

dynamic force exerted on the body of a component – generally from above – and its seating plane during the pick-up of the component (e.g. from a tape or tray)

NOTE The maximum level is normally taken into account.

#### 3.5

##### **placement force**

dynamic force exerted on the component body – generally from above – and its seating plane occurring during the period between the component's first contact with the substrate (or the soldering paste or adhesive, etc.) and its coming to rest

NOTE The maximum level is normally taken into account.