SLOVENSKI STANDARD
SIST EN 60191-1:2008

01-januar-2008

Mehanska standardizacija polprevodniških elementov - 1. del: Splošna pravila za pripravo tehničnih risb diskretnih elementov (IEC 60191-1:2007)

Mechanical standardization of semiconductor devices -- Part 1: General rules for the preparation of outline drawings of discrete devices

Mechanische Normung von Halbleiterbauelementen -- Teil 1: Allgemeine Regeln für die Erstellung von Gehäusezeichnungen von Einzelhalbleiterbauelementen

Normalisation mécanique des dispositifs à semi-conducteurs. - Partie 1: Règles générales pour la préparation du dessin des boîtiers des dispositifs à semi-conducteurs

Ta slovenski standard je istoveten z: **EN 60191-1:2007**

ICS:

01.100.25	Risbe s področja elektrotehnike in elektronike	Electrical and electronics engineering drawings
31.080.01	Polprevodniški elementi (naprave) na splošno	Semiconductor devices in general
31.240	Mehanske konstrukcije za elektronsko opremo	Mechanical structures for electronic equipment

SIST EN 60191-1:2008 **en,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 60191-1

June 2007

ICS 31.080.01

English version

Mechanical standardization of semiconductor devices - Part 1: General rules for the preparation of outline drawings of discrete devices

(IEC 60191-1:2007)

Normalisation mécanique des dispositifs à semi-conducteurs - Partie 1: Règles générales pour la préparation du dessin des boîtiers des dispositifs à semi-conducteurs (CEI 60191-1:2007)

Mechanische Normung von Halbleiterbauelementen - Teil 1: Allgemeine Regeln für die Erstellung von Gehäusezeichnungen von Einzelhalbleiterbauelementen (IEC 60191-1:2007)

This European Standard was approved by CENELEC on 2007-05-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

CENELEC

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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Ref. No. EN 60191-1:2007 E

Foreword

The text of document 47D/678/FDIS, future edition 2 of IEC 60191-1, prepared by SC 47D, Mechanical standardization for semiconductor devices, of IEC TC 47, Semiconductor devices, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60191-1 on 2007-05-01.

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)	2008-02-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2010-05-01

Annex ZA has been added by CENELEC.

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Endorsement notice

The text of the International Standard IEC 60191-1:2007 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following note has to be added for the standard indicated:

IEC 60191-6 NOTE Harmonized as EN 60191-6:2004 (not modified).

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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.

Publication	Year	Title	EN/HD	Year
IEC 60191-2 + supplements + amendments	1966	Mechanical standardization of semiconductor devices - Part 2: Dimensions	-	-
IEC 60191-4	-[1)]	Mechanical standardization of semiconductor devices - Part 4: Coding system and classification into forms of package outlines for semiconductor device packages	EN 60191-4	1999[2)]
ISO 370[3)]	-[1)]	Toleranced dimensions - Conversion from inches into millimetres and vice versa	-	-

[1)] Undated reference.

[2)] Valid edition at date of issue.

[3)] ISO 370 has been withdrawn on 2000-05-18.

INTERNATIONAL STANDARD

IEC 60191-1

Second edition
2007-04

Mechanical standardization of semiconductor devices –

Part 1: General rules for the preparation of outline drawings of discrete devices

Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

PRICE CODE W

For price, see current catalogue

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

MECHANICAL STANDARDIZATION OF SEMICONDUCTOR DEVICES –

Part 1: General rules for the preparation of outline drawings of discrete devices

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 60191-1 has been prepared by subcommittee 47D: Mechanical standardization for semiconductor devices, of IEC technical committee 47: Semiconductor devices.

This second edition cancels and replaces the first edition published in 1966 together with supplements 60191-1A:1969, 60191-1B:1970 and 60191-1C:1974 and constitutes a technical revision. The main changes from the previous edition are as follows:

– requirement added for SI-dimensions for new drawings to be published;
– former rules concerning inch-dimensions are given in an informative annex;
– former rules for coding are given in an informative annex;
– incorporation of the supplements;
– updating of references;
– restructuring and renumbering.

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

FDIS	Report on voting
47D/678/FDIS	47D/682/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 IEC 60191 series, published under the general title *Mechanical standardization of semiconductor devices*, comprises the following parts:

Part 1: General rules for the preparation of outline drawings of discrete devices

Part 2: Dimensions

Part 3: General rules for the preparation of outline drawings of integrated circuits

Part 4: Coding system and classification into forms of package outlines for semiconductor device packages

Part 5: Recommendations applying to integrated circuit packages using tape automated bonding (TAB)

Part 6: General rules for the preparation of outline drawings of surface mounted semiconductor device packages

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 of this publication may be issued at a later date.

MECHANICAL STANDARDIZATION OF SEMICONDUCTOR DEVICES –

Part 1: General rules for the preparation of outline drawings of discrete devices

1 Scope and object

This part of IEC 60191 gives guidelines on the preparation of outline drawings of discrete devices.

NOTE For preparation of outline drawings of surface mounted discrete devices, IEC 60191-6 should be referred to as well.

The primary object of these drawings is to indicate the space which should be allowed for devices in an equipment, together with other dimensional characteristics required to ensure mechanical interchangeability.

It should be noted that complete interchangeability involves other considerations such as the electrical and thermal characteristics of the semiconductor devices concerned.

The international standardization represented by these drawings therefore encourages the manufacturers of devices to comply with the tolerances shown on the drawings in order to extend their range of customers internationally. It also gives equipment designers an assurance of mechanical interchangeability between the devices obtained from suppliers in different countries, provided they allow the space in their equipment that is indicated by the drawings and take note of the more precise information on bases, studs, etc.

NOTE Additional details on the standardization philosophy used in this standard are given in Annex B.

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 60191-2:1966, *Mechanical standardization of semiconductor devices – Part 2: Dimensions* (including all supplements and amendments)

IEC 60191-4, *Mechanical standardization of semiconductor devices – Part 4: Coding system and classification into forms of package outlines for semiconductor device packages*

ISO 370, *Toleranced dimensions – Conversion from inches to millimetres and vice versa (withdrawn 2000-05)*

3 Terms and definitions

For the purposes of this document, the following definitions apply.

3.1
device outline drawing
drawing which includes all dimensional characteristics required for the mechanical interchangeability of the complete device. It includes the case or body, all terminals and the locating tab if present

3.2
terminal
that part of the semiconductor device primarily used in making an electrical, mechanical or thermal connection. Examples of terminals are flexible leads, rigid leads, pins, studs, etc.

3.3
case outline drawing
drawing which includes all dimensional characteristics required for the mechanical interchangeability of the case or body. It does not include the dimensions of the terminals or the locating tab if present, but their positions are shown by dotted lines

3.4
base drawing
drawing which includes all dimensional characteristics required for the mechanical interchangeability of the terminals and mechanical index

NOTE 1 Examples of these characteristics are: lead length, lead diameters with controlled zones, lead spacing, pitch circle diameter, thickness, width and length of a tab, etc

NOTE 2 The diameter or major axis of the case outline should not be given on the base drawing.

NOTE 3 Many semiconductor devices have identical cases, but differ in the number or the length of terminals. It is also possible to have the same type of base associated with cases which are not identical.

Consequently, there are advantages in having:

a) a single drawing including only the dimensional characteristics of the case outline and separate drawings for the various bases which can be associated with this case outline,

or

b) a single drawing including only the dimensional characteristics of the base and separate drawings for the various case outlines which can be associated with this base.

3.5
mechanical index
locating feature, or that portion of the device specifically designed to provide orientation.

NOTE Examples of a mechanical index are: key, keyway, locating tab, etc.

3.6
visual index
any single terminal (or omission of) readily distinguished by the eye from others or any distinctive boss, stippled pattern or colour mark adjacent to a terminal

3.7
datum
a theoretically exact geometric reference (such as axes, planes, straight lines etc.) to which toleranced features are related. Datums may be based on one or more datum features of a part

[ISO 5459:1981, definition 3.1]

3.8
seating plane or seating base
reference plane from which, in general, outline and base dimensions are given

3.9
seated height or mounted height
distance from the seating plane to the top of any exposed tip or rigid terminal present, otherwise to the top of the outline. Flexible terminals should not be included as part of the seated height, but the mounted height should include a minimum allowance necessary for an axially mounted flexible lead to be bent at right angles