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

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CONTENTS

FOREWORD 4
1 Scope 6
2 Normative references 6
3 Terms and definitions 7
4 General rules for all drawings 8
4.1 Drawing layout 8
4.2 Dimensions and tolerances 9
4.3 Methods for locating the datum 10
4.4 Numbering of terminals 11
4.4.1 General 11
4.4.2 Single-ended devices with terminals in a linear array 11
4.4.3 Single-ended devices with terminals in a circular array 11
4.4.4 Double-ended devices 11
4.4.5 Devices with terminals disposed in a square or rectangular periphery 11
4.4.6 Particular case of lozenge – shaped bases 11
4.4.7 Other devices 12
5 Additional rules 12
5.1 Rules for device and case outline drawings 12
5.2 Rules to specify the dimensions and positions of terminals 13
5.2.1 General rules 13
5.2.2 Rules to specify the dimensions and the positions of the terminals on a base drawing 13
5.3 Rules for gauge drawings 13
6 Inter-conversion of inch and millimetre dimensions and rules for rounding off 14
7 Rules for coding 14
Annex A (informative) Reference letter symbols 15
Annex B (informative) Rules to specify the dimensions and positions of terminals on a base drawing 18
B.1 Example of dimensioning for a circular base outline with no tab and having four terminals located symmetrically on a pitch circle 18
B.1.1 Interpretation of the principle of dimensioning 18
B.1.2 Checking 19
B.2 Example of dimensioning for a circular base outline with a tab and having four terminals located symmetrically on a pitch circle 19
B.2.1 Interpretation of the principle of dimensioning 19
B.2.2 Checking 20
Annex C (normative) General philosophy of flat base devices 24
Annex D (normative) Special rules for SMD-packages 26
D.1 General reference 26
D.2 Lead terminals 26
D.3 Measuring methods 26
Annex E (informative) Examples of semiconductor device drawings 27
Annex F (informative) Former rules for rounding off 33
F.1 Toleranced dimensions 33
F.1.1 Maximum and minimum values of toleranced dimensions 33
F.1.2 Nominal value of toleranced dimensions 33

F.2 Untoleranced dimensions (maximum only or minimum only) 33
F.3 Untoleranced nominal dimensions given for general information 33
F.4 Untoleranced nominal dimensions given to specify true geometrical positions 34
Annex G (informative) Former rules for coding 35
G.1 General 35
G.2 Device outlines 35
G.3 Bases 35
G.4 Case outlines 35
G.5 Type variants and provisional drawings 35
Bibliography 36

Figure 1 – Numbering of terminals for the particular case of lozenge – shaped bases 12
Figure 2 – System to indicate the dimensions of the terminals 13
Figure B.1 – Circular base outline with no tab 21
Figure B.2 – Tolerances of terminals 21
Figure B.3 – Gauge for a circular base outline with no tab 22
Figure B.4 – Circular base outline with tab 22
Figure B.5 – Gauge for a circular base outline with tab 23
Figure C.1 – Example of flat base outline 25
Figure E.1 – Long form package 27
Figure E.2 – Post/stud mount package 27
Figure E.3 – Cylindric package 28
Figure E.4 – Cylindric in-line package 29
Figure E.5 – Flange-mounted in-line package 29
Figure E.6 – Press package 30
Figure E.7 – SMD-package with flat leads 30
Figure E.8 – SMD-Package with gull-wing leads 31
Figure E.9 – SMD-package with no leads 32

Table A.1 – Dimensions of reference letter symbols 15

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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MECHANICAL STANDARDIZATION OF SEMICONDUCTOR DEVICES –

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

FOREWORD

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International Standard IEC 60191-1 has been prepared by subcommittee 47D: Semiconductor devices packaging, of IEC technical committee 47: Semiconductor devices.

This third edition cancels and replaces the second edition published in 2007. This edition constitutes a technical revision.

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

a) the Scope has been extended to include surface-mounted semiconductor devices with a lead count less than 8;
b) a definition of the term "stand-off" has been added;
c) the methods for locating the datum have been extended to be suitable for SMD-packages;
d) the visual identification of terminal position one for automatic handling has been clarified;
e) the rules for the drawing of terminals have been clarified;

f) Table A.1 has been completed with symbols specifically for SMD-packages;

g) Annex B "Standardization philosophy" has been deleted;

h) a normative Annex with special rules for SMD-packages has been added;

i) the examples of semiconductor device drawings have been aligned to state-of-the-art packages including SMD-packages.

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

CDV	Report on voting
47D/886/CDV	47D/896/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 in the IEC 60191 series, published under the general title *Mechanical standardization of semiconductor devices*, 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

- 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

This part of IEC 60191 gives guidelines on the preparation of outline drawings of discrete devices, including discrete surface-mounted semiconductor devices with lead count less than 8.

For the preparation of outline drawings of surface-mounted discrete devices with a lead count higher or equal to 8, IEC 60191-6 should be referred to as well.

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

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 of reference letter symbols used in this document are given in Annex A.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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, *Mechanical standardization of semiconductor devices – Part 2: Dimensions*

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

IEC 60191-6-1, *Mechanical standardization of semiconductor devices – Part 6-1: General rules for the preparation of outline drawings of surface mounted semiconductor device packages – Design guide for gull-wing lead terminals*

IEC 60191-6-3, *Mechanical standardization of semiconductor devices – Part 6-3: General rules for the preparation of outline drawings of surface mounted semiconductor device packages – Measuring methods for package dimensions of quad flat packs (QFP)*

IEC 60191-6-20, *Mechanical standardization of semiconductor devices – Part 6-20: General rules for the preparation of outline drawings of surface mounted semiconductor device packages – Measuring methods for package dimensions of small outline J-lead packages (SOJ)*

IEC 60191-6-21, *Mechanical standardization of semiconductor devices – Part 6-21: General rules for the preparation of outline drawings of surface mounted semiconductor device packages – Measuring methods for package dimensions of small outline packages (SOP)*