SLOVENSKI STANDARD
SIST EN 61191-2:2001

01-marec-2001

Printed board assemblies - Part 2: Sectional specification - Requirements for surface mount soldered assemblies

Printed board assemblies -- Part 2: Sectional specification - Requirements for surface mount soldered assemblies

Elektronikaufbauten auf Leiterplatten -- Teil 2: Rahmenspezifikation - Anforderungen an gelötete Baugruppen in Oberflächenmontage

Ensembles de cartes imprimées -- Partie 2: Spécification intermédiaire - Exigences relatives à l'assemblage par brasage pour montage en surface

Ta slovenski standard je istoveten z: **EN 61191-2:1998**

ICS:

31.180	Tiskana vezja (TIV) in tiskane ploģ e	Printed circuits and boards

SIST EN 61191-2:2001 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 61191-2

October 1998

ICS 31.240

Supersedes CECC 00 803:1995

English version

Printed board assemblies
Part 2: Sectional specification
Requirements for surface mount soldered assemblies
(IEC 61191-2:1998)

Ensembles de cartes imprimées
Partie 2: Spécification intermédiaire
Exigences relatives à l'assemblage par brasage pour montage en surface
(CEI 61191-2:1998)

Elektronikaufbauten auf Leiterplatten
Teil 2: Rahmenspezifikation
Anforderungen an gelötete Baugruppen in Oberflächenmontage
(IEC 61191-2:1998)

This European Standard was approved by CENELEC on 1998-10-01. 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, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

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

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Ref. No. EN 61191-2:1998 E

Foreword

The text of document 91/136/FDIS, future edition 1 of IEC 61191-2, prepared by IEC TC 91, Surface mounting technology, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61191-2 on 1998-10-01.

This EN 61191-2 is to be used in conjunction with EN 61191-1:1998.

This European Standard supersedes CECC 00 803:1995.

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) 1999-07-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2001-07-01

Annexes designated "normative" are part of the body of the standard.
In this standard, annexes A and ZA are normative.
Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61191-2:1998 was approved by CENELEC as a European Standard without any modification.

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

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 61191-1	1998	Printed board assemblies Part 1: Generic specification - Requirements for soldered electrical and electronic assemblies using surface mount and related assembly technologies	EN 61191-1	1998

NORME INTERNATIONALE

INTERNATIONAL STANDARD

CEI
IEC
61191-2

Première édition
First edition
1998-08

Ensembles de cartes imprimées –

Partie 2:
Spécification intermédiaire –
Exigences relatives à l'assemblage par brasage pour montage en surface

Printed board assemblies –

Part 2:
Sectional specification –
Requirements for surface mount soldered assemblies

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Международная Электротехническая Комиссия

CODE PRIX
PRICE CODE T

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FOREWORD

1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the 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, the IEC publishes International Standards. 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. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.

2) The formal decisions or agreements of the IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested National Committees.

3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical reports or guides and they are accepted by the National Committees in that sense.

4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.

5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.

6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 61191-2 has been prepared by IEC technical committee 91: Surface mounting technology.

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

FDIS	RVD
91/136/FDIS	91/148/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.

IEC 61191 consists of the following parts, under the general title *Printed board assemblies:*

Part 1: Generic specification – Requirements for soldered electrical and electronic assemblies using surface mount and related assembly technologies

Part 2: Sectional specification – Requirements for surface mount soldered assemblies

Part 3: Sectional specification – Requirements for through-hole mount soldered assemblies

Part 4: Sectional specification – Requirements for terminal soldered assemblies

Annex A forms an integral part of this standard.

This standard is to be read in conjunction with IEC 61191-1.

PRINTED BOARD ASSEMBLIES –

Part 2: Sectional specification – Requirements for surface mount soldered assemblies

1 General

1.1 Scope

This specification prescribes the requirements for surface mounted solder connections. The requirements pertain to those assemblies that are totally surface mounted or to the surface mounted portions of those assemblies that include other related technologies (e.g. through-hole, chip mounting, terminal mounting, etc.).

1.2 Classification

This specification recognizes that electrical and electronic assemblies are subject to classifications by intended end-item use. Three general end-product classes have been established to reflect differences in producibility, complexity, functional performance requirements, and verification (inspection/test) frequency. These are the following:

Level A: General electronic products

Level B: Dedicated service electronic products

Level C: High performance electronic products

The user of the assemblies is responsible for determining the level to which his product belongs. It should be recognized that there may be overlaps of equipment between levels. The contract shall specify the level required and indicate any exceptions or additional requirements to the parameters, where appropriate (see clause 4 of IEC 61191-1).

1.3 Interpretation of requirements

Unless otherwise specified by the user, the word "shall" signifies that the requirement is mandatory. Deviations from any "shall" requirement requires written acceptance by the user, e.g. via assembly drawing, specification or contract provision. The term "must" is used only to describe unavoidable situations.

The word “should” is used to indicate a recommendation or guidance statement. The word “may” indicates an optional situation. Both “should” and “may” express non-mandatory situations. “Will” is used to express a declaration of purpose. Refer to ISO/IEC Directives, part 3.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of IEC 61191. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this part of IEC 61191 are encouraged to investigate the possibility of applying the most

recent editions of the normative documents indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 61191-1:1998, *Printed board assemblies – Part 1: Generic specification – Requirements for soldered electrical and electronic assemblies using surface mount and related assembly technologies*

3 General requirements

The requirements in clause 4 of IEC 61191-1 are a mandatory part of this specification.

4 Surface mounting of components

This clause covers assembly of components that are placed on the surface to be manually or machine soldered and includes components designed for surface mounting as well as through-hole components that have been adapted for surface mounting technology.

4.1 Alignment requirements

Sufficient process control at all stages of design and assembly shall be in place to enable the post-soldering alignments and solder joint fillet controls specified in 5.2 to be achieved.

Relevant factors affecting the requirements include land and conductor design, component proximities, component and land solderability, solder paste/adhesive quantity and alignment and component placement accuracy.

4.1.1 Process control

If suitable process controls are not in place to ensure compliance with 4.1 and the intent of annex A, the detailed requirements of annex A shall be mandatory.

4.2 Surface mounted component requirements

The leads of lead surface mounted components shall be formed to their final configuration prior to mounting. Leads shall be formed in such a manner that the lead-to-body seal is not damaged or degraded and that they may be soldered into place by subsequent processes which do not result in residual stresses decreasing reliability. When the leads of dual-in-line packages, flatpacks, and other multilead devices become misaligned during processing or handling, they may be straightened to ensure parallelism and alignment prior to mounting, while maintaining the lead-to-body seal integrity.

4.2.1 Flatpack lead forming

Leads on opposite sides of surface mounted flatpacks shall be formed such that the non-parallelism between the base surface of the component and the surface of the printed board (i.e. component cant) is minimal. Component cant is permissible provided the final configuration does not exceed the maximum spacing limit of 2,0 mm (see figure 1).

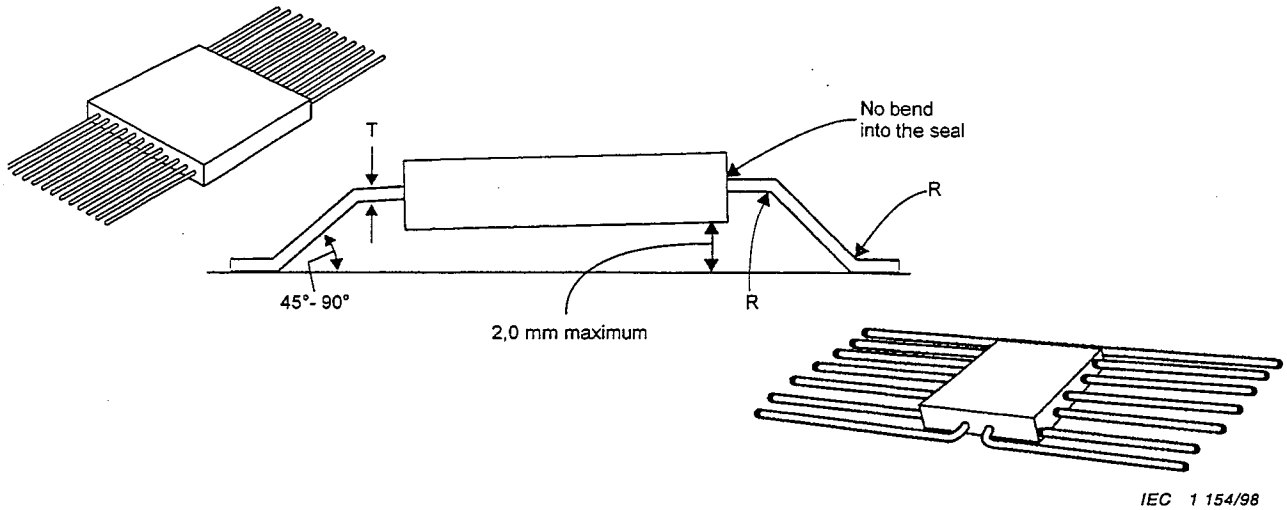

Figure 1 – Lead formation for surface mounted device

4.2.2 Surface mounted device lead bends

Leads shall be supported during forming to protect the lead-to-body seal. Bends shall not extend into the seal (see figure 1). The lead-bend radius (R) must be >1T (T = nominal lead thickness). The angle of that part of the lead between the upper and lower bends in relation to the mounting land shall be 45° minimum and 90° maximum.

4.2.2.1 Surface mounted device lead deformation

Lead deformation (unintentional bending) may be allowed when

a) no evidence of a short circuit or potential short circuit exists;

b) lead-to-body seal or weld is not damaged by the deformation;

c) does not violate minimum electrical spacing requirement;

d) top of lead does not extend beyond the top of body; preformed stress loops may extend above the top of the body; however, stand-off height limit shall not be exceeded;

e) toe curl, if present on bends, shall not exceed two times the thickness of the lead (2T);

f) coplanarity limits are not exceeded.

4.2.2.2 Flattened leads

Components with axial leads of round cross-section may be flattened (coined) for positive seating in surface mounting. If flattening is used, the flattened thickness shall be not less than 40 % of the original diameter. Flattened areas of leads shall be excluded from the 10 % deformation requirement in 6.4.2 of IEC 61191-1.

4.2.2.3 Dual-in-line packages (DIPs)

Dual-in-line packages may be surface mounted provided the leads are configured to meet the mounting requirements for surface mounted loaded parts. The lead preparation operation shall be performed using die forming/cutting systems. Hand forming and trimming of leads are prohibited.