



# SLOVENSKI STANDARD SIST EN 61188-5-5:2008

01-junij-2008

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Printed boards and printed board assemblies - Design and use - Part 5-5: Sectional requirements - Attachment (land/joint) considerations - Components with gull-wing leads on four sides

**iTeh STANDARD PREVIEW**

Leiterplatten und Flachbaugruppen - Konstruktion und Anwendung - Teil 5-5: Betrachtungen zur Montage (Anschlussfläche/Verbindung) - Bauelemente mit Gullwing-Anschlüssen auf vier Seiten

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Cartes imprimées et cartes imprimées équipées - Conception et utilisation - Partie 5-5: Considérations sur les liaisons pistes-soudures - Composants a sorties en aile de mouette sur quatre côtés

**Ta slovenski standard je istoveten z: EN 61188-5-5:2007**

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**Printed boards and printed board assemblies -  
Design and use -  
Part 5-5: Attachment (land/joint) considerations -  
Components with gull-wing leads on four sides  
(IEC 61188-5-5:2007)**

Cartes imprimées et  
cartes imprimées équipées -  
Conception et utilisation -  
Partie 5-5: Considérations  
sur les liaisons pistes-soudures -  
Composants à sorties  
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This European Standard was approved by CENELEC on 2007-11-01. 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.

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**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**

## Foreword

The text of document 91/704/FDIS, future edition 1 of IEC 61188-5-5, prepared by IEC TC 91, Electronics assembly technology, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61188-5-5 on 2007-11-01.

This standard is to be used in conjunction with EN 61188-5-1.

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) 2008-08-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2010-11-01

Annex ZA has been added by CENELEC.

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## Endorsement notice

The text of the International Standard IEC 61188-5-5:2007 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60068-2-54	NOTE	Harmonized as EN 60068-2-54:2006 (not modified).
IEC 60068-2-58	NOTE	Harmonized as EN 60068-2-58:2004 (not modified).
IEC 61191-1	NOTE	Harmonized as EN 61191-1:1998 (not modified).

**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 61188-5-1	- <sup>1)</sup>	Printed boards and printed board assemblies - Design and use - Part 5-1: Attachment (land/joint) considerations - Generic requirements	EN 61188-5-1	2002 <sup>2)</sup>

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<sup>1)</sup> Undated reference.

<sup>2)</sup> Valid edition at date of issue.

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# INTERNATIONAL STANDARD

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**Printed boards and printed board assemblies – Design and use –  
Part 5-5: Attachment (land/joint) considerations – Components with gull-wing  
leads on four sides**

SIST EN 61188-5-5:2008

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**PRINTED BOARDS AND PRINTED BOARD ASSEMBLIES –  
DESIGN AND USE –**

**Part 5-5: Attachment (land/joint) considerations –  
Components with gull-wing leads on four sides**

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 61188-5-5 has been prepared by IEC technical committee 91: Electronics assembly technology.

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

FDIS	Report on voting
91/704/FDIS	91/736/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.

IEC 61188-5-5 is to be read in conjunction with IEC 61188-5-1.

A list of all parts of the IEC 61188 series, under the general title *Printed boards and printed board assemblies – Design and use*, can be found on the IEC website.

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.

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## INTRODUCTION

This part of IEC 61188 covers land patterns for components with gull-wing leads on four sides. Each clause gives information in accordance with the following format.

The proposed land pattern dimensions in this standard are based upon the fundamental tolerance calculation combined with the given land protrusions and courtyard excesses (see IEC 61188-5-1, Generic requirements). The courtyard includes all issues of the normal manufacturing necessities.

The unaltered land pattern dimensions of this part are generally applicable for the solder paste application plus reflow soldering process. For application of the wave soldering process, the land pattern dimensions normally have to be modified. Orientation parallel to the wave direction is preferable and special, suitably dimensioned solder thieves should be added.

This standard offers a threefold land pattern dimensioning (levels 1, 2, and 3) on the basis of a threefold set of land protrusions and courtyard excesses: maximum (max.); median (mdn) and minimum (min.). Each land pattern has been assigned an identification number to indicate the characteristics of the specific robustness of the land patterns. Users also have the opportunity to organize the information so that it is most useful for their particular design.

If a user has good reason to use a concept different from that of IEC 61188-5-1, or if the user prefers unusual land protrusions, this standard should be used for checking the resulting solder fillet size.

It is the responsibility of the user to verify the SMD land patterns used for achieving an undisturbed mounting process including testing and an ensured reliability for the product stress conditions in use.

Component dimensions listed in this standard are those available on the market and should be regarded as for reference only.

## PRINTED BOARDS AND PRINTED BOARD ASSEMBLIES – DESIGN AND USE –

### Part 5-5: Attachment (land/joint) considerations – Components with gull-wing leads on four sides

#### 1 Scope

This part of IEC 61188 provides information on land pattern geometries used for the surface attachment of electronic components with gull-wing leads on four sides. The intent of the information presented herein is to provide the appropriate size, shape and tolerances of surface mount land patterns to ensure sufficient area for the appropriate solder fillet, and also allow for inspection, testing and reworking of those solder joints.

Each clause contains a specific set of criteria such that the information presented is consistent, providing information on the component, the component dimensions, the solder joint design and the land pattern dimensions.

The land pattern dimensions are based on a mathematical model that establishes a platform for a solder joint attachment to the printed board. The existing models create a platform that is capable of establishing a reliable solder alloy used to make that joint (lead-free, tin lead, etc.).

Process requirements for solder reflow are different based on the solder alloy and should be analyzed in order that the process is above that temperature a sufficient time to form a reliable metallurgical bond.

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#### 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 61188-5-1, *Printed boards and printed board assemblies – Design and use – Part 5-1: Attachment (land/joint) considerations – Generic requirements*

#### 3 General information

##### 3.1 General component description

The four-sided gull wing family is characterized by gull-wing leads on four sides of a square or rectangular package. The family includes both molded plastic and ceramic case styles. The acronyms PQFP (plastic quad flat pack) and CQFP (ceramic quad flat pack) are also used to describe the family.

There are several lead pitches within the family from 1,0 mm to 0,30 mm. High lead-count packages are available in this family that accommodate complex, high lead-count chips.

##### 3.2 Marking

The PQFP and CQFP families of parts are generally marked with the manufacturer's part numbers, manufacturer's name or symbol and a pin 1 indicator. Some parts may have a pin 1 feature in the case shape instead of pin 1 marking. Additional markings may include date-code manufacturing lot and/or manufacturing location.