

© Copyright SEK. Reproduction in any form without permission is prohibited.

## Konstruktion och användning av mönsterkort och kretskort – Del 5-5: Överväganden beträffande förbindningar (anslutningsytor och kragar) – Komponenter för ytmontering med ben på fyra sidor

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

Som svensk standard gäller europastandarden EN 61188-5-5:2007. Den svenska standarden innehåller den officiella engelska språkversionen av EN 61188-5-5:2007.

### Nationellt förord

Europastandarden EN 61188-5-5:2007

består av:

- **europastandardens ikraftsättningsdokument**, utarbetat inom CENELEC
- **IEC 61188-5-5, First edition, 2007 - Printed boards and printed board assemblies - Design and use - Part 5-5: Attachment (land/joint) considerations - Components with gull-wing leads on four sides**

utarbetad inom International Electrotechnical Commission, IEC.

Standarden ska användas tillsammans med SS-EN 61188-5-1.

### *Standarder underlättar utvecklingen och höjer elsäkerheten*

Det finns många fördelar med att ha gemensamma tekniska regler för bl a säkerhet, prestanda, dokumentation, utförande och skötsel av elprodukter, elanläggningar och metoder. Genom att utforma sådana standarder blir säkerhetskraven tydliga och utvecklingskostnaderna rimliga samtidigt som marknadens acceptans för produkten eller tjänsten ökar.

Många standarder inom elområdet beskriver tekniska lösningar och metoder som åstadkommer den elsäkerhet som föreskrivs av svenska myndigheter och av EU.

### *SEK är Sveriges röst i standardiseringsarbetet inom elområdet*

SEK Svensk Elstandard svarar för standardiseringen inom elområdet i Sverige och samordnar svensk medverkan i internationell och europeisk standardisering. SEK är en ideell organisation med frivilligt deltagande från svenska myndigheter, företag och organisationer som vill medverka till och påverka utformningen av tekniska regler inom elektrotekniken.

SEK samordnar svenska intressenters medverkan i SEKs tekniska kommittéer och stödjer svenska experters medverkan i internationella och europeiska projekt.

### *Stora delar av arbetet sker internationellt*

Utformningen av standarder sker i allt väsentligt i internationellt och europeiskt samarbete. SEK är svensk nationalkommitté av International Electrotechnical Commission (IEC) och Comité Européen de Normalisation Electrotechnique (CENELEC).

Standardiseringsarbetet inom SEK är organiserat i referensgrupper bestående av ett antal tekniska kommittéer som speglar hur arbetet inom IEC och CENELEC är organiserat.

Arbetet i de tekniska kommittéerna är öppet för alla svenska organisationer, företag, institutioner, myndigheter och statliga verk. Den årliga avgiften för deltagandet och intäkter från försäljning finansierar SEKs standardiseringsverksamhet och medlemsavgift till IEC och CENELEC.

### *Var med och påverka!*

Den som deltar i SEKs tekniska kommittéarbete har möjlighet att påverka framtida standarder och får tidig tillgång till information och dokumentation om utvecklingen inom sitt teknikområde. Arbetet och kontakterna med kollegor, kunder och konkurrenter kan gynnsamt påverka enskilda företags affärsutveckling och bidrar till deltagarnas egen kompetensutveckling.

Du som vill dra nytta av dessa möjligheter är välkommen att kontakta SEKs kansli för mer information.

### **SEK Svensk Elstandard**

Box 1284  
164 29 Kista  
Tel 08-444 14 00  
[www.elstandard.se](http://www.elstandard.se)

English version

**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  
en aile de mouette sur quatre côtés  
(CEI 61188-5-5:2007)

Leiterplatten und Flachbaugruppen -  
Konstruktion und Anwendung -  
Teil 5-5: Betrachtungen zur Montage  
(Anschlussfläche/Verbindung) -  
Bauelemente mit  
Gullwing-Anschlüssen  
auf vier Seiten  
(IEC 61188-5-5:2007)

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.

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**

## 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.

---

## 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>

---

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

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



## CONTENTS

1	Scope.....	7
2	Normative references .....	7
3	General information .....	7
3.1	General component description .....	7
3.2	Marking .....	7
3.3	Carrier packaging format .....	8
3.4	Process considerations .....	8
4	PQFP (square) .....	8
4.1	Field of application .....	8
4.2	Component descriptions .....	8
4.3	Component dimensions .....	9
4.4	Solder joint fillet design .....	13
4.5	Land pattern dimensions .....	14
5	PQFP (rectangular) .....	17
5.1	Field of application .....	17
5.2	Component descriptions .....	18
5.3	Component dimensions .....	19
5.4	Solder joint fillet design .....	19
5.5	Land pattern dimensions .....	21
6	PLQFP (square) .....	23
6.1	Field of application .....	23
6.2	Component descriptions .....	23
6.3	Component dimensions .....	24
6.4	Solder joint fillet design .....	26
6.5	Land pattern dimensions .....	28
7	PLQFP (rectangular) .....	31
7.1	Field of application .....	31
7.2	Component descriptions .....	31
7.3	Component dimensions .....	32
7.4	Solder joint fillet design .....	33
7.5	Land pattern dimensions .....	34
8	PTQFP (square) .....	35
8.1	Field of application .....	35
8.2	Component descriptions .....	35
8.3	Component dimensions .....	36
8.4	Solder joint fillet design .....	39
8.5	Land pattern dimensions .....	40
	Figure 1 – PQFP (square).....	9
	Figure 2 – PQFP (square) component dimensions .....	10
	Figure 3 – Solder joint fillet design.....	14
	Figure 4 – PQFP (square) land pattern dimensions .....	17

Figure 5 – PQFP (rectangular).....	18
Figure 6 – PQFP (rectangular) component dimensions .....	19
Figure 7 – Solder joint fillet design.....	21
Figure 8 – PQFP (rectangular) land pattern dimensions .....	22
Figure 9 – PLQFP (square).....	23
Figure 10 – PLQFP (square) component dimensions .....	24
Figure 11 – Solder joint fillet design .....	28
Figure 12 – PLQFP (square) land pattern dimensions .....	31
Figure 13 – PLQFP (rectangular) .....	32
Figure 14 – PLQFP (rectangular) component dimensions.....	32
Figure 15 – Solder joint fillet design .....	34
Figure 16 – PLQFP (rectangular) land pattern dimensions .....	35
Figure 17 – PTQFP (square).....	36
Figure 18 – PTQFP component dimensions .....	37
Figure 19 – Solder joint fillet design .....	40
Figure 20 – PTQFP land pattern dimensions.....	42



## 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.

#### 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*

■ [REDACTED]

■ [REDACTED]

[REDACTED]

[REDACTED]

■ [REDACTED]

[REDACTED]