



**NSAI**  
Standards

Irish Standard  
I.S. EN IEC 61188-6-1:2021

Circuit boards and circuit board  
assemblies - Design and use - Part 6-1:  
Land pattern design - Generic  
requirements for land pattern on circuit  
boards

**I.S. EN IEC 61188-6-1:2021**

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## National Foreword

I.S. EN IEC 61188-6-1:2021 is the adopted Irish version of the European Document EN IEC 61188-6-1:2021, Circuit boards and circuit board assemblies - Design and use - Part 6-1: Land pattern design - Generic requirements for land pattern on circuit boards

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
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**EN IEC 61188-6-1**

April 2021

ICS 31.180; 31.190

Supersedes EN 61188-5-1:2002 and all of its  
amendments and corrigenda (if any)

English Version

**Circuit boards and circuit board assemblies - Design and use -  
Part 6-1: Land pattern design - Generic requirements for land  
pattern on circuit boards  
(IEC 61188-6-1:2021)**

Cartes imprimées et cartes imprimées équipées -  
Conception et utilisation - Partie 6-1: Conception de la zone  
de report - Exigences génériques pour la zone de report sur  
les cartes imprimées  
(IEC 61188-6-1:2021)

Leiterplatten und Flachbaugruppen - Konstruktion und  
Anwendung - Teil 6-1: Anschlussflächengestaltung -  
Allgemeine Anforderungen an die Anschlussflächenstruktur  
auf Leiterplatten  
(IEC 61188-6-1:2021)

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

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Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

**EN IEC 61188-6-1:2021 (E)****European foreword**

The text of document 91/1636/CDV, future edition 1 of IEC 61188-6-1, prepared by IEC/TC 91 "Electronics assembly technology" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 61188-6-1:2021.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2021-12-30
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2024-03-30

This document supersedes EN 61188-5-1:2002 and all of its amendments and corrigenda (if any).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

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The text of the International Standard IEC 61188-6-1:2021 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 61188-5-1:2002	NOTE	Harmonized as EN 61188-5-1:2002 (not modified)
IEC 61188-5-2:2003	NOTE	Harmonized as EN 61188-5-2:2003 (not modified)
IEC 61188-5-3:2007	NOTE	Harmonized as EN 61188-5-3:2007 (not modified)
IEC 61188-5-4:2007	NOTE	Harmonized as EN 61188-5-4:2007 (not modified)
IEC 61188-5-5:2007	NOTE	Harmonized as EN 61188-5-5:2007 (not modified)
IEC 61188-5-6:2003	NOTE	Harmonized as EN 61188-5-6:2003 (not modified)
IEC 61188-5-8:2007	NOTE	Harmonized as EN 61188-5-8:2008 (not modified)
IEC 61188-6-2	NOTE	Harmonized as EN IEC 61188-6-2
IEC 61760-1	NOTE	Harmonized as EN IEC 61760-1

## Annex ZA (normative)

### Normative references to international publications with their corresponding European publications

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.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: [www.cenelec.eu](http://www.cenelec.eu).

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60194	-	Printed board design, manufacture and assembly - Terms and definitions	-	-
IEC 61191-1	-	Printed board assemblies - Part 1: Generic specification - Requirements for soldered electrical and electronic assemblies using surface mount and related assembly technologies	EN IEC 61191-1	-
IEC 61191-2	2017	Printed board assemblies - Part 2: Sectional specification - Requirements for surface mount soldered assemblies	EN 61191-2	2017
IEC 61191-3	-	Printed board assemblies - Part 3: Sectional specification - Requirements for through-hole mount soldered assemblies	EN 61191-3	-
IEC 61191-4	-	Printed board assemblies - Part 4: Sectional specification - Requirements for terminal soldered assemblies	EN 61191-4	-
IEC 61760-3	-	Surface mounting technology - Part 3: Standard method for the specification of components for through-hole reflow (THR) soldering	EN IEC 61760-3	-

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**IEC 61188-6-1**

Edition 1.0 2021-02

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE



**Circuit boards and circuit board assemblies – Design and use –  
Part 6-1: Land pattern design – Generic requirements for land pattern on  
circuit boards**

**Cartes imprimées et cartes imprimées équipées – Conception et utilisation –  
Partie 6-1: Conception de la zone de report – Exigences génériques pour la zone  
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**IEC 61188-6-1**

Edition 1.0 2021-02

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE



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**Circuit boards and circuit board assemblies – Design and use –  
Part 6-1: Land pattern design – Generic requirements for land pattern on  
circuit boards**

**Cartes imprimées et cartes imprimées équipées – Conception et utilisation –  
Partie 6-1: Conception de la zone de report – Exigences génériques pour la zone  
de report sur les cartes imprimées**

INTERNATIONAL  
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## CONTENTS

FOREWORD.....	4
INTRODUCTION.....	6
1 Scope.....	7
2 Normative references .....	7
3 Terms and definitions .....	7
4 Design requirements.....	10
4.1 General.....	10
4.2 Product classification .....	10
4.3 General surface mount land and land pattern requirements.....	11
4.4 Component packages and soldering process .....	11
4.5 Soldering surface requirements.....	11
4.5.1 Main soldering techniques .....	11
4.5.2 Reflow soldering .....	11
4.5.3 Reflow soldering of leaded components.....	12
4.5.4 Wave soldering of surface mounted components .....	12
4.5.5 Wave soldering of through-hole mounted components .....	14
4.6 Soldering surface definition techniques .....	15
4.6.1 General .....	15
4.6.2 Metal defined lands .....	15
4.6.3 Solder mask defined lands.....	15
4.6.4 Comparison of solder mask defined and non solder mask defined solderable surfaces .....	16
5 Component classification .....	16
5.1 General.....	16
5.2 Leaded components.....	16
5.3 Surface mount components.....	17
6 The proportional dimensioning system.....	17
7 Terminal classification .....	18
7.1 Leaded terminals .....	18
7.2 Surface mount terminals .....	18
7.2.1 Terminal classes.....	18
7.2.2 Flat bottom terminals .....	18
7.2.3 General land requirements for flat bottom terminals.....	19
7.2.4 Flat bottom and vertical side terminals.....	19
7.2.5 General land requirements for flat bottom and vertical side terminals .....	20
8 Requirements for lands of solder joints .....	20
8.1 Land/Pad dimensioning considerations of leaded terminals.....	20
8.2 Land dimensioning considerations of surface mount terminals .....	20
Annex A (informative) Dimensioning concept of former IEC 61188-5-1.....	21
A.1 Dimensioning systems .....	21
A.1.1 General .....	21
A.1.2 Component tolerancing.....	22
A.1.3 Solving for dimension Z .....	25
A.1.4 Land tolerancing.....	25
A.1.5 Fabrication allowances .....	25
A.1.6 Assembly tolerancing.....	26

A.1.7	Dimension and tolerance analysis.....	27
Annex B (informative)	History of land dimensioning standards .....	29
B.1	IPC-782 .....	29
B.2	IEC 61188-5 series .....	29
B.3	IPC-7351 .....	29
Bibliography	.....	30
Figure 1	– Component placed on solder paste .....	12
Figure 2	– Component glued for wave soldering.....	13
Figure 3	– Wave soldered component with solder thieves .....	14
Figure 4	– Solder joint of a leaded component .....	15
Figure 5	– Leaded component – Capacitor.....	17
Figure 6	– Surface mount component – Chip capacitor .....	17
Figure 7	– Flat bottom terminals with wettable flanks .....	18
Figure A.1	– Profile tolerancing method .....	21
Figure A.2	– Example of 3216M capacitor dimensioning for optimum solder fillet condition .....	22
Figure A.3	– Profile dimensioning of gull-wing leaded SOIC .....	23
Figure A.4	– Pitch for multiple leaded component .....	28
Table 1	– Flat bottom terminals.....	19
Table 2	– Flat bottom/vertical side terminals .....	19
Table A.1	– Conductor width tolerances .....	26
Table A.2	– Feature location accuracy .....	26

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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### **CIRCUIT BOARDS AND CIRCUIT BOARD ASSEMBLIES – DESIGN AND USE –**

#### **Part 6-1: Land pattern design – Generic requirements for land pattern on circuit boards**

### FOREWORD

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IEC 61188-6-1 has been prepared by IEC technical committee 91: Electronics assembly technology. It is an International Standard.

This first edition cancels and replaces the first edition of IEC 61188-5-1 published in 2002, and constitutes a technical revision.

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

- a) The content is completely updated to reflect current industry requirements. See Introduction.

The text of this International Standard is based on the following documents:

Draft	Report on voting
91/1636/CDV	91/1671/RVC

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at [www.iec.ch/members\\_experts/refdocs](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/standardsdev/publications](http://www.iec.ch/standardsdev/publications).

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

Future documents in this series will carry the new general title as cited above. Titles of existing documents in this series will be updated at the time of the next edition.

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- amended.

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## INTRODUCTION

Explanation why the following standards will be replaced by the new IEC 6188-6 series:

IEC 61188-5-1:2002, *Printed boards and printed board assemblies – Design and use – Part 5-1: Attachment (land/joint) considerations – Generic requirements*

IEC 61188-5-2:2003, *Printed boards and printed board assemblies – Design and use – Part 5-2: Attachment (land/joint) considerations – Discrete components*

IEC 61188-5-3:2007, *Printed boards and printed board assemblies – Design and use – Part 5-3: Attachment (land/joint) considerations – Components with gull-wing leads on two sides*

IEC 61188-5-4:2007, *Printed boards and printed board assemblies – Design and use – Part 5-4: Attachment (land/joint) considerations – Components with J leads on two sides*

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

IEC 61188-5-6:2003, *Printed boards and printed board assemblies – Design and use – Part 5-6: Attachment (land/joint) considerations – Chip carriers with J-leads on four sides*

IEC 61188-5-8:2007, *Printed board and printed board assemblies – Design and use – Part 5-8: Attachment (land/joint) considerations – Area array components (BGA, FBGA, CGA, LGA)*

Content is mostly equivalent to IPC-782A with Amendments 1 and 2, which was replaced in 2002 by IPC-7351. The component spectrum and pitch levels have dramatically increased since publication of the IEC 61188-5 (all parts) and the dimensioning concept does no longer fulfil the mounting and soldering requirements.



## **CIRCUIT BOARDS AND CIRCUIT BOARD ASSEMBLIES – DESIGN AND USE –**

### **Part 6-1: Land pattern design – Generic requirements for land pattern on circuit boards**

#### **1 Scope**

This part of IEC 61188 specifies the requirements for soldering surfaces on circuit boards. This includes lands and land pattern for surface mounted components and also solderable hole configurations for through-hole mounted components. These requirements are based on the solder joint requirements of the IEC 61191-1, IEC 61191-2, IEC 61191-3 and IEC 61191-4.

#### **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 60194, *Printed board design, manufacture and assembly – Terms and definitions*

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

IEC 61191-2:2017, *Printed board assemblies – Part 2: Sectional specification – Requirements for surface mount soldered assemblies*

IEC 61191-3, *Printed board assemblies – Part 3: Sectional specification – Requirements for through-hole mount soldered assemblies*

IEC 61191-4, *Printed board assemblies – Part 4: Sectional specification – Requirements for terminal soldered assemblies*

IEC 61760-3, *Surface mounting technology – Part 3: Standard method for the specification of components for through hole reflow (THR) soldering*

#### **3 Terms and definitions**

For the purposes of this document, the terms and definitions given in IEC 60194, and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

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