IEC 61188-5-5

Edition 1.0 2007-10

INTERNATIONAL STANDARD

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

INTERNATIONAL ELECTROTECHNICAL COMMISSION

PRICE CODE X

ICS 31.180

ISBN 2-8318-9342-9

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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- withdrawn;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.

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.

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*