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Ferrite cores - Guidelines on dimensions and the limits of surface irregularities - Part 9: Planar cores

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Ferrite cores - Guidelines on dimensions and the limits of surface irregularities - Part 9: Planar cores

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This redline version of the official IEC Standard allows the user to identify the changes made to the previous edition IEC 63093-9:2020. A vertical bar appears in the margin wherever a change has been made. Additions are in green text, deletions are in strikethrough red text.

IEC 63093-9 has been prepared by IEC technical committee 51: Magnetic components, ferrite and magnetic powder materials. It is an International Standard.

This second edition cancels and replaces the first edition published in 2020. This edition constitutes a technical revision.

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

a) correction of some numbers in Table 2;

b) amendment of Table 6 following IEC 60205.

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

Draft	Report on voting
51/1587/FDIS	51/1600/RVD

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. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

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A list of all parts in the IEC 63211 series, published under the general title *Ferrite cores - guidelines on dimensions and the limits of surface irregularities*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

– reconfirmed,

– withdrawn, or

– revised.

INTRODUCTION

Today, DC-to-DC converter power supplies increasingly employ transformers and chokes, the windings of which are made of multi-layer printed circuit boards or are constructed in the motherboard, rather than the transformers wound by conventional copper wires. This document specifies the optimum shapes and dimensions of cores for surface mounted devices (SMDs) and of cores for which the windings are constructed in the motherboard. The motherboard has slots cut out to accept the ferrite cores. This is called the total integration in a multi-layer motherboard. The core shape specified in this document satisfies the demand for lower profile as well as for smaller floor space.

The relations between the main dimensions of planar E-, ER- and EL-cores differ from those of standard cores. For example, the width of planar cores is larger while the total height is much smaller. Also, the thickness of the legs is in most cases smaller than compared to standard cores. Therefore, the concept of fixed reference dimensions to determine the length of crack limits yields crack lengths which are not acceptable for this type of core. This document follows another concept which relates the crack length to dimensions of the surface on which the crack occurs.

Also, the concept to determine the maximum area of chips based on the total mating surface fails in the case of planar cores. The outer legs of planar cores are much thinner than those of standard cores which makes overlapping and gluing much more difficult. A single chip of maximum size on the outer leg can affect the functionality of the core set. Therefore, this document uses as a reference the mating surface on which the chip occurs.

Windings of planar cores are often PCBs which are glued to the inner surfaces of the planar core. For this reason, it is important that the inner surfaces of the planar cores ~~should~~ have a better quality than the inner surfaces of standard cores. This was taken into account by reducing the maximum allowable area of pull-outs in the inner surfaces.

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