



INTERNATIONAL STANDARD

**Ferrite cores – Guidelines on dimensions and the limits of surface irregularities –
Part 6: ETD-cores for use in power supplies**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 29.100.10

ISBN 978-2-8322-5834-7

Warning! Make sure that you obtained this publication from an authorized distributor.

CONTENTS

FOREWORD.....	4
1 Scope.....	6
2 Normative references	6
3 Terms and definitions	6
4 Primary dimensions	6
4.1 General.....	6
4.2 Dimensions of ETD-cores	7
4.2.1 Principal dimensions	7
4.2.2 Effective parameter and A_{\min} values	7
4.3 Dimensional limits for coil formers.....	8
4.4 Pin locations and base outlines.....	9
4.5 Pin diameter	12
5 Marking	12
6 Mounting	12
7 Limits of surface irregularities.....	12
7.1 General.....	12
7.2 Examples of surface irregularities	12
7.3 Chips and ragged edges	13
7.3.1 General.....	13
7.3.2 Chips and ragged edges on the mating surfaces.....	13
7.3.3 Chips and ragged edges on the other surfaces	13
7.4 Cracks	16
7.5 Flash	16
7.6 Pull-outs	16
7.7 Crystallites.....	17
7.8 Pores.....	18
Annex A (normative) Derived standards	19
Annex B (normative) Example of dimensions for gauges to check the dimensions of ETD-cores complying with this document.....	22
B.1 General.....	22
B.2 Procedure and requirements	22
Annex C (informative) Reference of allowable areas of chips	23
Bibliography.....	24
Figure 1 – Dimensions of ETD-cores.....	7
Figure 2 – Essential dimensions of coil formers	8
Figure 3 – Pin locations and base outlines viewed from the upper-side of the board	10
Figure 4 – Examples of surface irregularities	13
Figure 5 – Chip location for ETD-cores	14
Figure 6 – Crack and pull-out locations for ETD-cores	16
Figure 7 – Crystallite location for ETD-cores.....	17
Figure 8 – Pore location for ETD-cores	18
Figure A.1 – Main dimensions of coil formers.....	20
Figure B.1 – Gauge dimensions	22

Table 1 – Dimensions of ETD-cores	7
Table 2 – Effective parameter and A_{\min} values	8
Table 3 – Dimensional limits for coil formers	9
Table 4 – Area and length reference for visual inspection	15
Table 5 – Limits for cracks	17
Table A.1 – Main dimensions of coil formers	21
Table B.1 – Gauge dimensions	22
Table C.1 – Allowable areas of chips for ETD-cores.....	23

INTERNATIONAL ELECTROTECHNICAL COMMISSION

FERRITE CORES – GUIDELINES ON DIMENSIONS AND THE LIMITS OF SURFACE IRREGULARITIES –

Part 6: ETD-cores for use in power supplies

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.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 63093-6 has been prepared by IEC technical committee 51: Magnetic components, ferrite and magnetic powder materials.

This first edition cancels and replaces the first edition of IEC 62317-6 published in 2015 and the second edition of IEC 60424-3 published in 2015. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to IEC 62317-6:2015 and IEC 60424-3:2015:

- a) This document integrates IEC 62317-6:2015 and IEC 60424-3:2015;
- b) Table 1 – Allowable areas of chips for ETD-cores, of IEC 60424-3:2015, has been moved to Annex C (informative) of this document.

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

CDV	Report on voting
51/1215/CDV	51/1234/RVC

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 63093 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 "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

FERRITE CORES – GUIDELINES ON DIMENSIONS AND THE LIMITS OF SURFACE IRREGULARITIES –

Part 6: ETD-cores for use in power supplies

1 Scope

This part of IEC 63093 specifies the dimensions that are of importance for mechanical interchangeability for a preferred range of ETD-cores made of ferrite and the essential dimensions of coil formers to be used with them, as well the effective parameter values to be used in calculations involving them. It also gives guidelines on allowable limits of surface irregularities applicable to ETD-cores.

The specifications contained in this document are useful in negotiations between ferrite core manufacturers and users about surface irregularities.

The use of derived standards which give more detailed specifications of component parts while still permitting compliance with this document is discussed in Annex A.

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 60205, *Calculation of the effective parameters of magnetic piece parts*

IEC 60401-1, *Terms and nomenclature for cores made of magnetically soft ferrites – Part 1: Terms used for physical irregularities*

IEC 60424-1, *Ferrite cores – Guidelines on the limits of surface irregularities – Part 1: General specification*