

INTERNATIONAL STANDARD

IEC 62317-9

Edition 1.1

2007-03

Edition 1:2006 consolidated with amendment 1:2007

Ferrite cores – Dimensions –

Part 9: Planar cores

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International Electrotechnical Commission
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INTERNATIONAL ELECTROTECHNICAL COMMISSION

FERRITE CORES – DIMENSIONS –

Part 9: Planar cores

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the 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.
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International Standard IEC 62317-9 has been prepared IEC technical committee 51: Magnetic components and ferrite materials.

This International Standard cancels and replaces IEC 61860 published in 2000. This edition constitutes a technical revision. This International Standard includes the following significant technical changes and additions with respect to IEC 61860:2000:

- a) addition of the planar EL family of cores;
- b) addition of the low-profile ER family of cores;
- c) the low-profile RM-family defined in IEC 61860:2000 has been moved to IEC 62137-4 for RM-cores and associated parts.

This consolidated version of IEC 62317-9 consists of the first edition (2006) [documents 51/849/FDIS and 51/858/RVD] and its amendment 1 (2007) [documents 51/866/CDV and 51/876/RVC].

The technical content is therefore identical to the base edition and its amendment and has been prepared for user convenience.

It bears the edition number 1.1.

A vertical line in the margin shows where the base publication has been modified by amendment 1.

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

IEC 62317 consists of the following parts, under the general title *Ferrite cores – Dimensions*:

- Part 1: General (under consideration)
- Part 2: Pot cores (under consideration, currently available as IEC 60133)
- Part 3: Half pot cores (under consideration, currently available as IEC 62323)
- Part 4: RM-cores and associated parts
- Part 5: EP-cores (under consideration, currently available as IEC 61596)
- Part 6: ETD-cores (under consideration, currently available as IEC 61185)
- Part 7: EER-cores
- Part 8: E-cores
- Part 9: Planar cores
- Part 10: PM-cores (under consideration, currently available as IEC 61247)
- Part 11: EC-cores (under consideration, currently available as IEC 60647)
- Part 12: Uncoated ring cores (under consideration, currently available as IEC 61604)

The committee has decided that the contents of the base publication and its amendments 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

Nowadays, d.c.-d.c. converter power supplies increasingly employ transformers and chokes the windings of which are made of multi-layer printed circuit board or the windings are constructed in the motherboard, rather than the transformers wound by conventional copper wires. This part of IEC 62317 specifies the optimum shapes and dimensions of cores for SMD (Surface Mounted Device) 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 part of IEC 62317 satisfies the demand for lower profile as well as for smaller floor space.

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FERRITE CORES – DIMENSIONS –

Part 9: Planar cores

1 Scope

This International Standard specifies the shapes and dimensions of ferrite cores for inductive components (transformers and chokes) of which the coil is typically constructed by multi-layer board or the coil is part of the motherboard.

The general consideration upon which the design of this range of cores is based is given in Annex A.

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

IEC 62317-4:2005, *Ferrite cores – Dimensions – Part 4: RM cores and associated parts*

3 Primary standard

3.1 Planar shape and dimensions

The main shapes and dimensions shall be as given in the following figures and tables.

The main shape, dimensions, and parameters for EL core are given in:

Figure 1 – Planar core EL and mating PLT-core;

Table 1 – Dimensions of planar core EL and the mating PLT-core;

Table 2 – Effective parameter values and A_{\min} values.

The main shape, dimensions, and parameters for low-profile E-cores are given in:

Figure 2 – Low-profile E-core and mating PLT-core;

Table 3 – Dimensions of low-profile E-core and the mating PLT-core;

Table 4 – Effective parameter values and A_{\min} values.

The main shape, dimensions, and parameters for ER-cores are given in:

Figure 3 – Low-profile ER-core;

Table 5 – Dimensions of low-profile ER-core;

Table 6 – Effective parameter values and A_{\min} values.

A uniform dimensional nomenclature has been chosen in order to facilitate a comparison of major physical attributes among the different core shapes.

3.2 Dimensions of planar core EL and the mating PLT-core

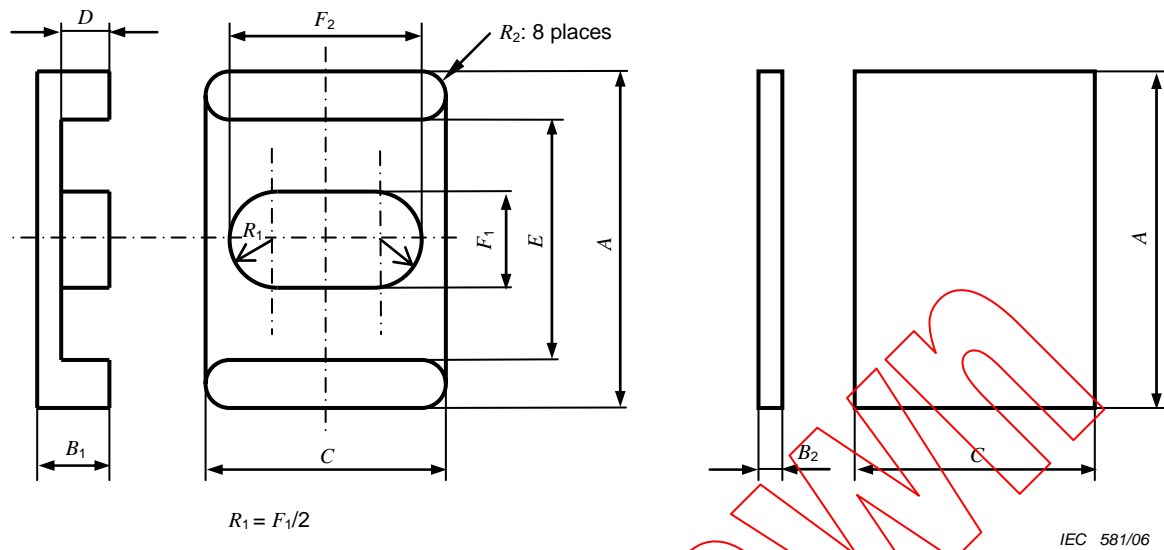


Figure 1 – Planar core EL and the mating PLT-core

Table 1 – Dimensions of planar core EL and the mating PLT-core

Size		Dimensions in millimetres								
		A	B ₁	B ₂	C	D	E	F ₁	F ₂	R ₂
EL11 × 2,0	min.	10,80	1,91		8,60	0,90	8,97	2,68	6,25	0,3
	max.	11,20	2,11		9,00	1,10	9,37	2,88	6,55	
EL11 × 3,0	min.	10,80	2,91		8,60	1,90	8,97	2,68	6,25	0,3
	max.	11,20	3,11		9,00	2,10	9,37	2,88	6,55	
PLT11 × 1,0	min.	10,80		0,96	8,60					
	max.	11,20		1,06	9,00					
EL13 × 2,2	min.	12,75	2,09		10,20	0,90	10,63	3,19	7,41	0,3
	max.	13,25	2,29		10,60	1,10	11,03	3,39	7,71	
EL13 × 3,2	min.	12,75	3,09		10,20	1,90	10,63	3,19	7,41	0,3
	max.	13,25	3,29		10,60	2,10	11,03	3,39	7,71	
PLT13 × 1,2	min.	12,75		1,14	10,20					
	max.	13,25		1,24	10,60					
EL15,5 × 2,9	min.	15,20	2,82		12,15	1,40	12,67	3,82	8,81	0,3
	max.	15,80	3,02		12,65	1,60	13,17	4,02	9,21	
EL15,5 × 4,4	min.	15,20	4,32		12,15	2,90	12,67	3,82	8,81	0,3
	max.	15,80	4,52		12,65	3,10	13,17	4,02	9,21	
PLT15,5 × 1,4	min.	15,20		1,32	12,15					
	max.	15,80		1,52	12,65					
EL18 × 3,7	min.	17,70	3,55		14,15	1,90	14,70	4,45	10,27	0,3
	max.	18,30	3,75		14,65	2,10	15,30	4,65	10,67	
EL18 × 5,7	min.	17,70	5,55		14,15	3,85	14,70	4,45	10,27	0,3
	max.	18,30	5,75		14,65	4,15	15,30	4,65	10,67	

Table 1 (continued)

Dimensions in millimetres

Size		A	B ₁	B ₂	C	D	E	F ₁	F ₂	R ₂
PLT18 × 1,7	min.	17,70		1,55	14,15					
	max.	18,30		1,75	14,65					
EL20 × 3,8	min.	19,65	3,73		15,70	1,90	16,37	4,91	11,43	0,5
	max.	20,35	3,93		16,30	2,10	16,97	5,21	11,83	
EL20 × 5,8	min.	19,65	5,68		15,70	3,85	16,37	4,91	11,43	0,5
	max.	20,35	5,98		16,30	4,15	16,97	5,21	11,83	
PLT20 × 1,8	min.	19,65		1,73	15,70					
	max.	20,35		1,93	16,30					
EL22 × 4,0	min.	21,60	3,92		17,30	1,90	17,98	5,41	12,54	0,5
	max.	22,40	4,12		17,90	2,10	18,68	5,71	13,04	
EL22 × 6,0	min.	21,60	5,87		17,30	3,85	17,98	5,41	12,54	0,5
	max.	22,40	6,17		17,90	4,15	18,68	5,71	13,04	
PLT22 × 2,0	min.	21,60		1,92	17,30					
	max.	22,40		2,12	17,90					
EL25 × 4,3	min.	24,55	4,19		19,65	1,90	20,48	6,17	14,29	0,5
	max.	25,45	4,39		20,35	2,10	21,18	6,47	14,79	
EL25 × 6,3	min.	24,55	6,14		19,65	3,85	20,48	6,17	14,29	0,5
	max.	25,45	6,44		20,35	4,15	21,18	6,47	14,79	
PLT25 × 2,3	min.	24,55		2,19	19,65					
	max.	25,45		2,39	20,35					

Table 2 – Effective parameter values and A_{min} values

Size	C ₁ mm ⁻¹	C ₂ mm ⁻³	l _e mm	A _e mm ²	V _e mm ³	A _{min} ^{a)} mm ²	Remarks
EL-EL11 × 4,0	0,826 45	49,923 × 10 ⁻³	13,7	16,5	226	15,9	Combination EL-EL refers to two shorter height EL cores for size-designation.
EL-EL13 × 4,4	0,666 66	28,815 × 10 ⁻³	15,4	23,1	357	22,4	
EL-EL15,5 × 5,8	0,596 74	18,143 × 10 ⁻³	19,6	32,9	646	31,9	
EL-EL18 × 7,3	0,538 30	12,162 × 10 ⁻³	23,8	44,3	1 050	43,0	
EL-EL20 × 7,7	0,468 64	8,586 6 × 10 ⁻³	25,6	54,6	1 400	52,9	
EL-EL22 × 8,0	0,412 80	6,231 4 × 10 ⁻³	27,3	66,2	1 810	64,2	
EL-EL25 × 8,6	0,350 34	4,094 2 × 10 ⁻³	30,0	85,6	2 570	83,0	
EL-PLT11 × 4,0	0,826 45	49,943 × 10 ⁻³	13,7	16,5	226	15,9	Combination EL-PLT refers to one taller height EL core paired with one PLT core for each size-designation.
EL-PLT13 × 4,4	0,666 66	28,815 × 10 ⁻³	15,4	23,1	357	22,4	
EL-PLT15,5 × 5,8	0,569 74	18,143 × 10 ⁻³	19,6	32,9	646	31,9	
EL-PLT18 × 7,3	0,538 30	12,162 × 10 ⁻³	23,8	44,3	1 050	43,0	
EL-PLT20 × 7,7	0,468 64	8,586 6 × 10 ⁻³	25,6	54,6	1 400	52,9	
EL-PLT22 × 8,0	0,412 80	6,231 4 × 10 ⁻³	27,3	66,2	1 810	64,2	
EL-PLT25 × 8,6	0,350 34	4,094 2 × 10 ⁻³	30,0	85,6	2 570	83,0	