

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Ferrite cores – Guidelines on dimensions and the limits of surface irregularities –
Part 14: EFD-cores**

(standards.iteh.ai)

**Noyaux ferrites – Lignes directrices relatives aux dimensions et aux limites des
irrégularités de surface –
Partie 14: Noyaux EFD**

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Partie 14: Noyaux EFD

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**FERRITE CORES –
GUIDELINES ON DIMENSIONS AND
THE LIMITS OF SURFACE IRREGULARITIES –****Part 14: EFD-cores**

FOREWORD

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International Standard IEC 63093-14 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 62317-14 published in 2008. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to IEC 62317-14:2008:

- a) guidelines on the limits of surface irregularities of EFD-cores were added.

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

FDIS	Report on voting
51/1272A/FDIS	51/1286/RVD

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

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

Part 14: EFD-cores

1 Scope

This part of IEC 63093 specifies the dimensions that are of importance for mechanical interchangeability for a preferred range of EFD-cores, the essential dimensions of coil formers to be used with them, and the effective parameter values to be used in calculations involving them. It also gives guidance on the allowable limits of surface irregularities applicable to EFD-cores in accordance with the relevant generic specification.

The selection of core sizes for this document is based on the philosophy of including those sizes which are industrial standards, either by inclusion in national standards, or by broad-based use in industry.

This document is a specification useful in the negotiation between ferrite core manufacturers and users about surface irregularities.

The general considerations that the design of this range of cores is based upon are given in Annex A.

2 Normative references

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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*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60401-1 and IEC 60424-1 apply.

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4 Primary dimensions

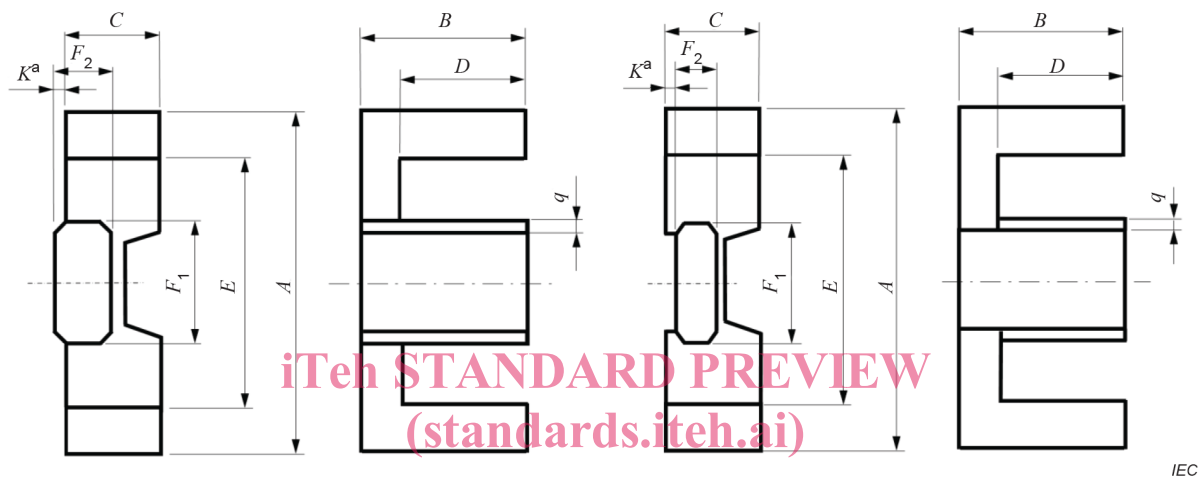
4.1 General

Compliance with the following requirements ensures mechanical interchangeability of complete assemblies and wound coil formers.

4.2 Dimensions of EFD-cores

4.2.1 Principal dimensions

The principal dimensions of EFD-cores shall be as given in Figure 1 and Table 1.



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^a The K dimension designates, with respect to the base level of the core, the difference in height between the base level of the core and the underside of the centre leg. In the typical case, the underside of the centre leg is above the base level of the core, and the value of K is positive. In the case where the underside of the centre leg is below the base level of the core, then the value of K will be negative.

a) EFD 10/5/3, EFD 12/6/3,5 and EFD 15/8/5

b) EFD 20/10/7, EFD 25/13/9 and EFD 30/15/9

Figure 1 – Dimensions of EFD-cores

Table 1 – Dimensions of EFD-cores

Size		A mm	B mm	C mm	D mm	E mm	F_1 mm	F_2 mm	K mm	q mm
EFD 10/5/3	Min.	10,20	5,10	2,60	3,60	7,40	4,40	1,40	-0,20	0,20
	Nom.									
EFD 12/6/3,5	Min.	12,20	6,10	3,40	4,40	8,75	5,25	1,90	-0,20	0,20
	Nom.									
EFD 15/8/5	Min.	14,60	7,35	4,50	5,25	10,65	5,15	2,30	-0,20	0,45
	Nom.									
EFD 20/10/7	Min.	19,45	9,85	6,50	7,45	14,90	8,70	3,45	0,17	0,75
	Nom.									
EFD25/13/9	Min.	24,35	12,35	8,90	9,05	18,10	11,20	5,05	0,60	1,00
	Nom.									
EFD 30/15/9	Min.	29,20	14,85	8,90	10,90	21,65	14,35	4,75	0,75	1,00
	Nom.									
	Max.	30,80	15,15	9,30	11,50	23,15	14,85	5,05		

NOTE The dimensions of the cores can be checked by means of gauges.

4.2.2 Effective parameter and A_{\min} values

The effective parameter values for cores having the dimensions given in 4.2.1 are as shown in Table 2. The definitions of effective parameters and their calculations shall be as given in IEC 60205.

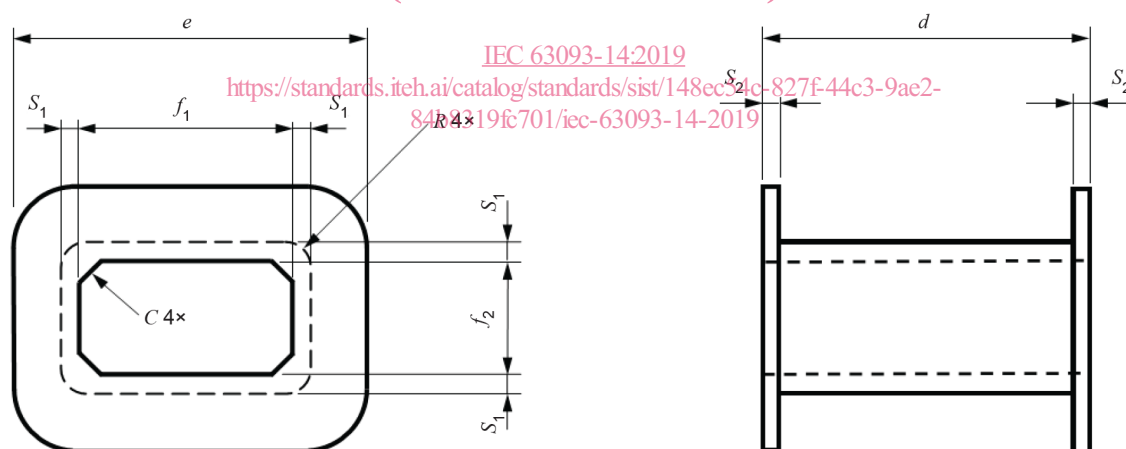
Table 2 – Effective parameter and A_{\min} values for EFD-cores

Size	C_1 mm ⁻¹	C_2 mm ⁻³	A_e mm ²	L_e mm	V_e mm ³	A_{\min}^a mm ²
EFD 10/5/3	3,301 8	0,459 50	7,19	23,7	170	6,52
EFD 12/6/3,5	2,495 8	0,218 71	11,4	28,5	325	10,7
EFD 15/8/5	2,263 3	0,149 51	15,1	34,3	519	12,3
EFD 20/10/7	1,536 6	0,050 025	30,7	47,2	1 450	30,6
EFD 25/13/9	0,995 25	0,017 301	57,5	57,3	3 290	57,3
EFD 30/15/9	0,980 56	0,014 147	69,3	68,0	4 710	69,2

^a See IEC 60205.

4.3 Dimensional limits for coil formers

The main dimensions of coil formers suitable for use with a pair of EFD-cores shall be as given in Figure 2 and Table 3.



IEC

Figure 2 – Main dimensions of coil formers for EFD-cores

Table 3 – Dimensional limits of coil formers for EFD-cores

Size	e mm	f_1 mm	f_2 mm	d mm	S_1 mm	S_2 mm	C^a mm	R mm
	Max.	Min.	Min.	Max.	Min.	Min.	Nom.	Nom.
EFD 10/5/3	7,3	4,8	1,6	7,1	0,35	0,30	0,2	0,8
EFD 12/6/3,5	8,65	5,6	2,15	8,7	0,42	0,30	0,2	0,8
EFD 15/8/5	10,4	5,55	2,6	10,55	0,45	0,40	0,45	1,5
EFD 20/10/7	14,8	9,2	3,8	14,8	0,40	0,40	0,75	2,0
EFD 25/13/9	18,0	11,7	5,4	18,0	0,55	0,55	1,0	2,0
EFD 30/15/9	21,6	14,9	5,1	21,7	0,50	0,60	1,0	2,0
^a Chamfer.								

4.4 Locations of pins and base outlines

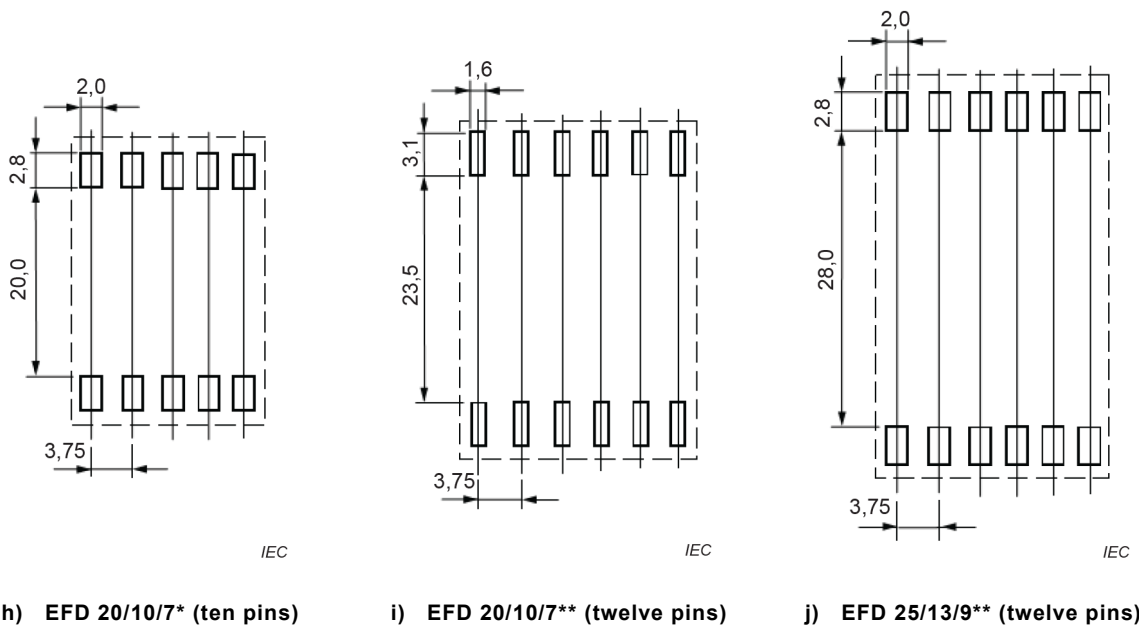
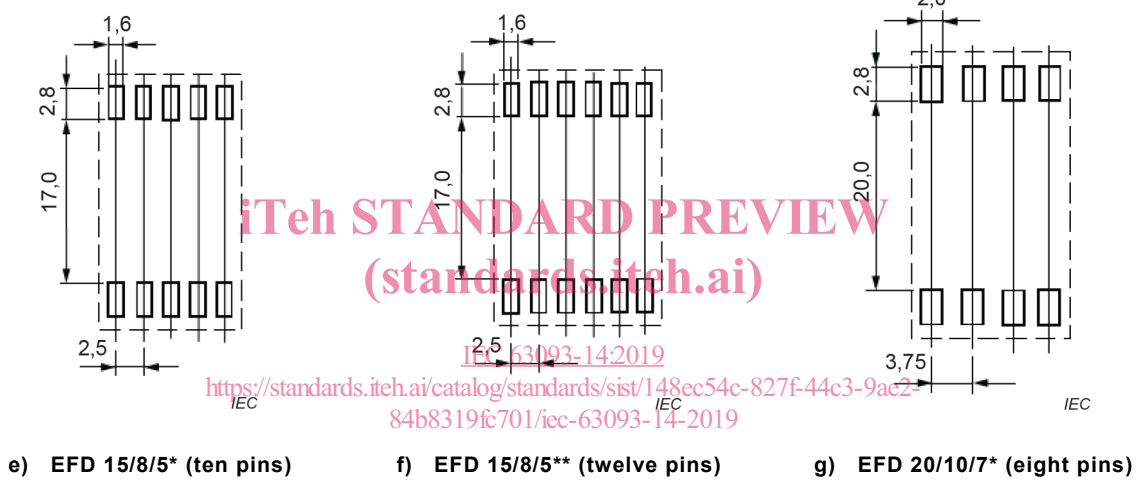
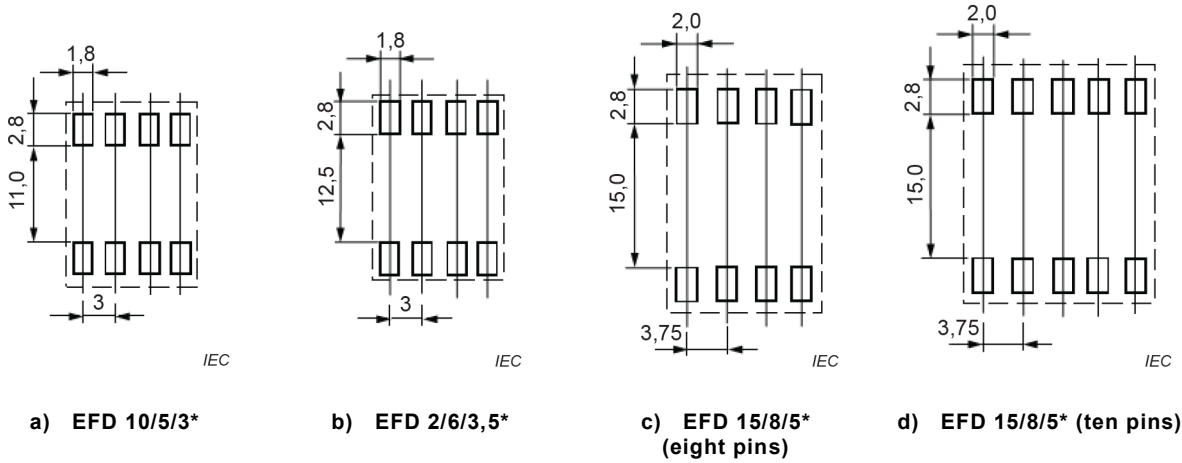
These shall be as shown in Figure 3 and Figure 4, in which the base is viewed in the mounting direction, i.e. from the upper side of the printed wiring board.

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Dimensions in millimetres



NOTE * J terminals

** Gull wing terminals

Figure 3 – Locations of pins (SMD type) viewed from the upper side of the board

Dimensions in millimetres

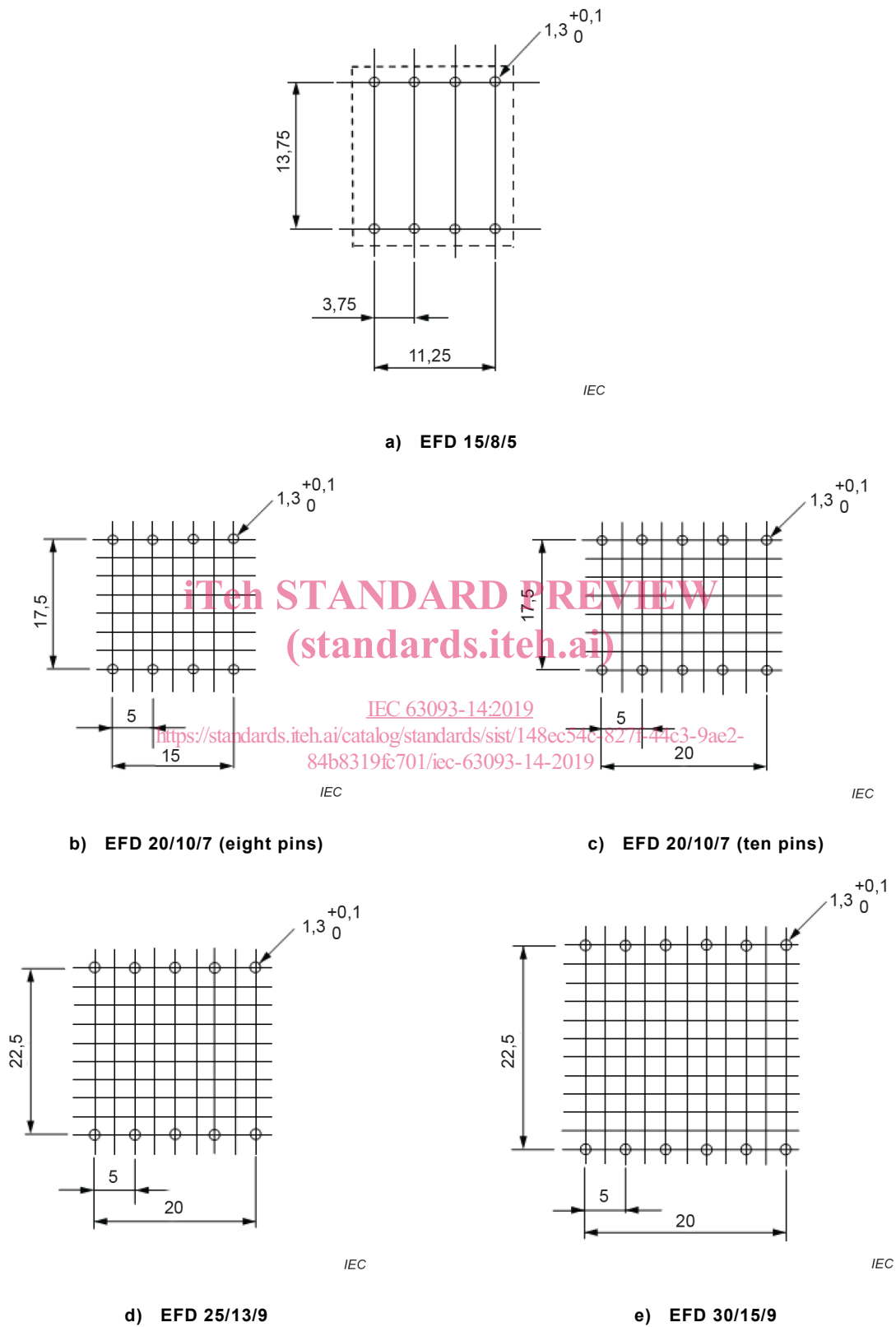


Figure 4 – Locations of pins (PTH type) viewed from the upper side of the board