

For detailed information see Data Handbook C4/C5

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M

For detailed information on these and other types see Data Handbook C4/C5

Our soft ferrites (Ferroxcube) are available in a range of core shapes suitable for many different applications. The following table is a survey of their main properties.

Main characteristics of the different Ferroxcube grades.

grade	μ_i $\pm 20\%$	flux density B at 3000 A/m 25 °C mT	curie temp. °C	resist- ivity Ωm	ferrite type	main application area	available core shapes
4D1	50	$\neq 240$	≥ 400	10^3	NiZn	HF-tuning	beads, rods, tubes
4C6	100	380	350	10^3	NiZn	telecom filters	P, RM
4C65	125	380	350	10^3	NiZn	HF-tuning suppression	ring cores
4B1	250	350	250	10^5	NiZn	HF-tuning suppression	beads
6B1	250	350	250	10^3	LiZn	HF-tuning suppression	rods, tubes
2A2	350	250	135	10^6	MgZn	deflection coils	yoke rings
4A11	600	350	125	10^5	NiZn	suppression	ring cores
4S2	600	350	125	10^5	NiZn	suppression	beads
3D3	750	400	200	2	MnZn	telecom filters	P, RM
3B1	900	400	150	0.2	MnZn	suppression	rods, tubes, beads
3C2	900	400	150	0.1	MnZn	deflection coils	yoke rings
3H1	2300	400	130	1	MnZn	telecom filters	P, RM
3H3	2000	450	160	2	MnZn	telecom filters	P, RM
3C8	2000	500	200	1	MnZn	LF-power	E, EF, ETD, EC, U, I
3C85	2000	500	200	1	MnZn	MF-power	E, EF, ETD, EC, rods, rings, P, RM
3F3	2000	500	200	2	MnZn	HF-power	E, EF, ETD, P, RM rings
3B8	2300	500	200	1	MnZn	MF-power	P, RM
3S1	4000	400	125	0.3	MnZn	suppression	beads
3C11	4300	400	125	0.3	MnZn	suppression	rings, EF
3E4	4700	400	125	0.3	MnZn	pulse transformers	RM
3E25	6000	400	125	0.1	MnZn	suppression	rings
3E5	10000	350	120	0.01	MnZn	pulse transformers	RM

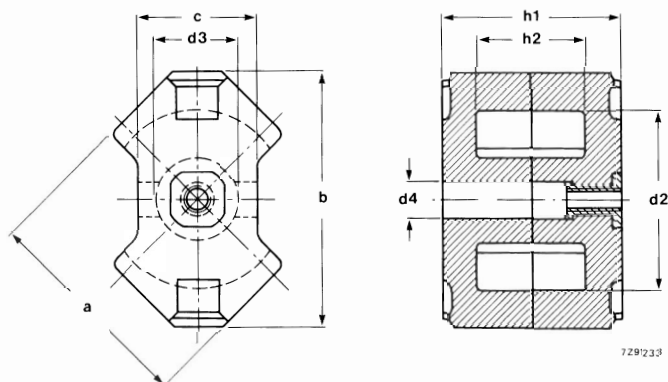


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RM-cores (**Rectangular Module**) have been developed for use in analog, high density telecommunications. They are standardised to IEC-205.

available types:

- core halves without air gap and nut
- gapped sets of cores within a range of AL-values, with or without moulded in nuts
- inductance adjusters
- coilformers and clips



type	dimensions (mm)								Ve mm ³	Ae mm ³	le mm
	a	b	c	d2	d3	d4	h1	h2			
RM4	9.8	11	4.6	8	3.9	2.04	10.4	7	230	11.0	21.3
RM5	12.3	14.6	6.8	10.2	4.9	2.04	10.4	6.3	450	21.2	21.4
RM6R	14.7	17.9	6.3	12.6	6.3	3	12.4	8	810	32.0	25.6
RM6S	14.7	17.9	8.2	12.4	6.2	3	12.4	8	840	31.0	27.3
RM8	19.7	23.2	11	17	8.4	4.4	16.4	10.8	1850	52.0	35.5
RM10	24.7	28.5	13.5	21.2	10.9	5.4	18.7	12.4	3470	83.2	41.7

Ungapped cores (without nut)

	4C6	3D3	3H3	3H1
RM4	4322 020 26530	4322 020 26520	4322 020 26540	4322 020 26510
RM5	4322 020 26780	4322 020 26770	4322 020 26790	4322 020 26760
RM6S	4322 020 25080	4322 020 25060	4322 020 2520	4322 020 25020
RM6R	4322 020 25150	4322 020 25140	4322 020 25190	4322 020 2513
RM8	4322 020 27280	4322 020 27270	4322 020 27290	4322 020 27260
RM10				4322 020 28400

For gapped core sets and recommended adjusters see handbook C4/C5.



PHILIPS

For detailed information on these and other types see Data Handbook C4/C5

RM-coilformers are well adapted to automatic winding and are made of a phenolic thermosetting resin (UI 94-V0).

The clips deliver adequate clamping force for high stability. Round back clips may also be used, however, their clamping force is lower.

Coil formers – 1 section

RM core type	cat. number 4 pins	cat. number 6 pins	cat. number 12 pins
RM4	–	4322 021 32210	–
RM5	4322 021 32830	4322 021 32840	–
RM6R	4322 021 32280	4322 021 32290	–
RM6S	4312 021 29240	4312 021 29250	–
RM8	–	–	4322 021 32390
RM10	–	–	4322 021 32470

Coil formers – 2 sections

RM core type	cat. number 6 pins	cat. number 8 pins	cat. number 12 pins
RM6R	4322 021 32310	–	–
RM6S	4322 021 32950	–	–
RM8	–	4322 021 32420	–
RM10	–	–	4322 021 32790

Clips

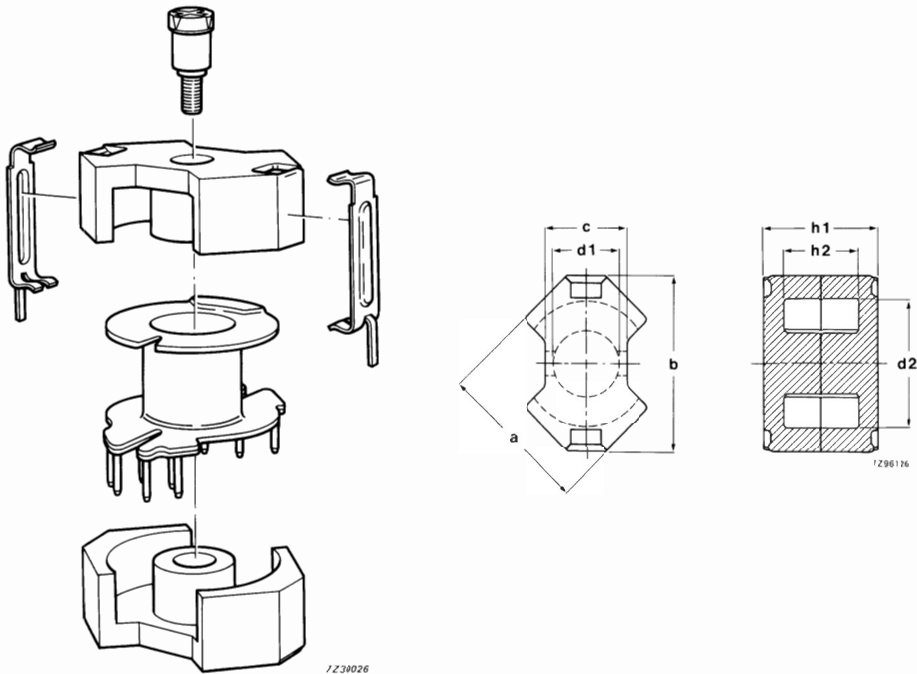
RM core type	catalogue number		
RM4	4322 021 31900		
RM5	4322 021 31900		
RM6S/R	4322 021 31780		
RM8	4322 021 31840		
RM10	4322 021 34320		



For detailed information on these and other types see Data Handbook C4/C5

RM/i-cores have no central hole and are very suitable for use in small power transformers, general purpose transformers and chokes. The dimensions are according to IEC-205.

- Types available are:
- ungapped cor halves
 - gapped core sets within a standard range of AL-values
 - coilformers and clips



core type	dimensions (mm)							magnetic dimensions		
	a	b	c	d1	d2	h1	h2	V _e (mm ³)	A _e (mm ²)	l _e (mm)
RM4/i	9.9	11.1	4.6	3.9	8	10.4	7	322	14.4	23.3
RM5/i	12.4	14.7	6.8	4.9	10.2	10.4	6.3	574	24.8	23.2
RM6-S/i	14.8	18	8.2	6.3	12.4	12.4	8	1090	37	29.2
RM8/i	20.0	23.4	11.1	8.4	16.9	16.4	10.8	2440	63	38.4
RM10/i	24.8	28.6	13.6	11	21.1	18.6	12.3	4310	96.6	44.6
RM12/i	29.9	37.6	16.5	12.9	24.8	24.5	16.6	8340	146	56.6
RM14/i	35	42.5	19	15.1	28.9	30.1	20.6	13900	198	70



For detailed information on these and other types see Data Handbook C4/C5

Range of ungapped cores

type	grade	A_L	cat. number core halves without air gap
RM4/i	3E4	2500 + 40% - 25%	4322 020 26610
	3E5	3500 + 40% - 30%	4322 020 26620
	3F3	1000 ± 25%	4322 020 26600
RM5/i	3B8	2000 ± 25%	4322 020 27080
	3C85	1800 ± 25%	4322 020 27100
	3E4	4500 + 40% - 25%	4322 020 27120
	3E5	6300 + 40% - 25%	4322 020 27130
	3F3	1800 ± 25%	4322 020 27110
RM6-S/i	3B8	2700 ± 25%	4322 020 27930
	3C85	2400 ± 25%	4322 020 27950
	3E4	5800 + 40% - 25%	4322 020 55500
	3E5	8600 + 40% - 25%	4322 020 55510
	3F3	2400 ± 25%	4322 020 27970
RM8/i	3B8	3900 ± 25%	4322 020 27420
	3C85	3300 ± 25%	4322 020 28170
	3E4	8000 + 40% - 25%	4322 020 28190
	3E5	13000 + 40% - 25%	4322 020 28230
	3F3	3300 ± 25%	4322 020 28220
RM10/i	3B8	5300 ± 25%	4322 020 28370
	3C85	4500 ± 25%	4322 020 28430
	3E4	11000 + 40% - 25%	4322 020 28490
	3E5	18000 + 40% - 25%	4322 020 55250
	3F3	4500 ± 25%	4322 020 28450
RM12/i	3C85	5500 ± 25%	4322 020 55010
	3E4	13000 + 40% - 25%	4322 020 55030
	3F3	5500 ± 25%	4322 020 55020
RM14/i	3C85	6300 ± 25%	4322 020 24870
	3F3	6300 ± 25%	4322 020 24840



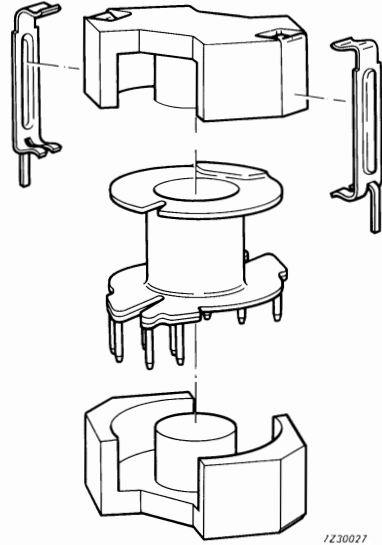
For detailed information on these and other types see Data Handbook C4/C5

Two types of coilformers are available:

- phenolic coilformers, also used for the RM-range (UI 94-Vo)
- dual-in-line coilformers for power transformers, material: polyterephthalate (UI 94-Vo)

Two types of clips may be used:

- straight-backed types for high clamping forces
- rounded-backed types for easier assembly and lower clamping forces



Coil formers – 1 section

RM core type	cat. number 4 pins	cat. number 6 pins	cat. number 12 pins
RM4	–	4322 021 32210	–
RM5	4322 021 32830	4322 021 32840	–
RM6R	4322 021 32280	4322 021 32290	–
RM6S	4312 021 29240	4312 021 29250	–
RM8	–	–	4322 021 32390
RM10	–	–	4322 021 32470
RM14	–	–	4322 021 33530

Coil formers – 2 sections

RM core type	cat. number 6 pins	cat. number 8 pins	cat. number 12 pins
RM6R	4322 021 32310	–	–
RM6S	4322 021 32950	–	–
RM8	–	4322 021 32420	–
RM10	–	–	4322 021 32790



For detailed information on these and other types see Data Handbook C4/C5

Coil formers for power applications (DIL)

RM core type	number of pins	catalogue number
RM6-S/i	8	4322 021 34040
RM8/i	12	4322 021 34050
RM10/i	12	4322 021 34060
RM12/i	12	4322 021 34110
RM14/i	12	4322 021 34070

Clips

RM core type	catalogue number	RM/i core type	catalogue number
RM4	4322 021 31900	RM4/i	4322 021 34290
RM5	4322 021 31900	RM5/i	4322 021 34290
RM6S/R	4322 021 31780	RM6S/R/i	4322 021 34300
RM8	4322 021 31840	RM8/i	4322 021 34310
RM10	4322 021 34320	RM10/i	4322 021 34320
		RM12/i	4322 021 34910
		RM14/i	4322 021 34920

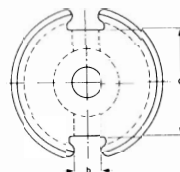
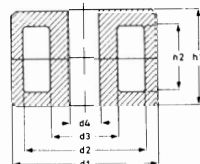


For detailed information on these and other types see Data Handbook C4/C5

P-cores are not comparable with RM-cores when dense component packing and efficient winding are required. However, they are ideal when maximum magnetic shielding is required.

Types available are:

- core halves without airgap and nut
- gapped core sets within a standard (IEC) range of A_L -values, with or without moulded-in nut
- inductance adjusters
- core assembly hardware



The dimensions of potcores P11/7 to P42/42 are in accordance

with the specifications:

IEC 133 (International)

C93-324 (France)

DIN 41294 (Germany)

BS 4061 (U.K.)

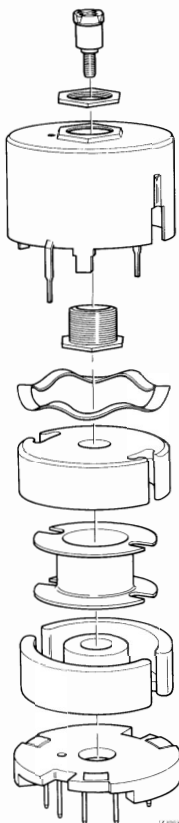
size	dimensions (mm)								core factor and effective dimensions			
	d1	d2	d3	d4	h1	h2	a	b	C_1 mm ⁻¹	V_e mm ³	l_e mm	A_e mm ²
P5.8/3.3	5.8	4.5	2.5	0.95	3.3	3.2	—	1.4	1.68	37.0	7.9	4.7
P7.4/4.2	7.4	5.8	3	1.4	4.2	2.8	5.7	1.6	1.43	70.0	10.0	7.0
P9/5	9.3	7.5	3.9	2.04	5.4	3.6	6.5	2	1.24	126	12.5	10.1
P11/7	11.1	9	4.7	2.04	6.5	4.4	6.8	2.2	0.956	251	15.5	16.2
P14/8	14	11.6	6	3	8.4	5.6	9.5	3.3	0.789	495	19.8	25.1
P18/11	17.9	14.9	7.6	3	10.6	7.2	13.4	3.8	0.597	1120	25.8	43.3
P22/13	21.5	17.9	9.4	4.4	13.4	9.2	15	3.8	0.497	2000	31.5	63.4
P26/16	25.5	21.2	11.5	5.4	16	11	18	3.8	0.400	3530	37.6	93.9
P30/19	30	25	13.5	5.4	18.9	13	20.5	4.3	0.330	6190	45.2	137
P36/22	35.5	29.9	16	5.4	21.9	14.6	26.2	4.9	0.264	10700	53.2	202
P42/29	42.4	35.6	17.7	5.4	29.4	20.3	32	5.1	0.259	18200	68.6	265

Ungapped cores without nut (4322 020)

core type	4C6	3D3	3H3	3H1	3B8	3C85	3F3
P5.8/3.3				54			
P7.4/4.2				54600			
P9/5	20940	20900		20980			
P11/7	21140	21020		21010	28760	28840	28830
P14/8	21350	21270		21260	21400	29100	29090
P18/11	21610	21520	21650	21510	21670	29300	29290
P22/13	21830	21770		21760	21940	29570	29560
P26/16	22110	22020		22010	22220	29850	29840
P30/19		22270		22260	22390	22480	22470
P36/22		22520		22510	22610	22690	22670
P42/29				22760		22900	22880



For detailed information on these and other types see Data Handbook C4/C5

**Coil formers**

potcore type	cat. number 1 section	cat. number 2 sections	cat. number 3 sections
P5.8/3.3	4322 021 33550	—	—
P7.4/4.2	4322 021 32990	—	—
P9/5	4322 021 31700	—	—
P11/7	4322 021 30240	—	—
P14/8	4322 021 30250	4322 021 30260	—
P18/11	4322 021 30270	4322 021 30280	4322 021 30290
P22/13	4322 021 30300	4322 021 3031	4322 021 30320
P26/16	4322 021 30330	4322 021 30340	4322 021 3035
P30/19	4322 021 30360	4322 021 30370	4322 021 3038
P36/22	4322 021 30390	4322 021 30400	4322 021 3041
P42/29	4322 021 30420	4322 021 30430	—

Accessories for P-cores (cont.)

For detailed information on these and other types see Data Handbook C4/C5


Mounting parts catalogue number 4322 021

	P11/7	P14/8	P18/11	P22/13	P26/16	P30/19	P36/22	P42/29
Brass container	30510	30520	30530	30540	30550	30560	30570	30580
Tag plate	30180	30440	30450	30460	30470	30480	30490	30500
Spring	30620	30630	30640	30650	30660	30670	30680	30690
nut			30710	3071	3071	3071	3071	3071
fixing back			30720	3072	3072	3072	3072	3072

**PHILIPS**

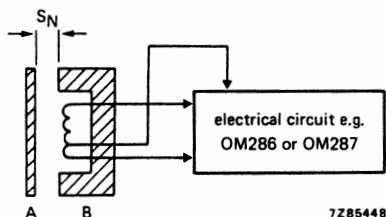
P-cores for proximity switches

For detailed information on these and other types see Data Handbook C4/C5

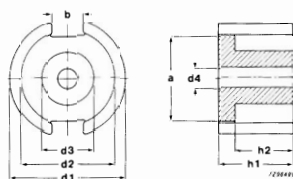
An inductive proximity detector operates as follows. A metal object, A approaches—or recedes from an open potcore half with coil, B. The change in the Q of the oscillator is used to generate an electrical signal that can be used to drive an electromechanical relay, an audible alarm or similar devices.

Potcore halves with diameters up to 9.4 mm are manufactured in Ferroxcube grade 3D3 and potcore halves with diameters 14 mm and larger, in Ferroxcube 3H1. This is because the operating frequency of oscillators with small potcore halves is higher than that of oscillators with large potcore halves.

Suitable coil formers are available for all potcore halves. The polycarbonate material of the coilformer limits the maximum potting temperature to 110°C. The potting material should be somewhat flexible to avoid high mechanical stress on the Ferroxcube potcore halves.



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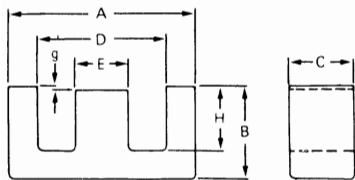
type	dimensions (mm)							
	d1	d2	d3	d4	h1	h2	a	b
PH 5.6/3.6	5.75	4.5	2.5	0.95	3.6	2.8	4	1.5
PH 7.4/3.9	7.4	5.8	3	1.38	3.95	2.8	5.7	1.6
PH 9.4/4.8	9.4	7.5	3.9	2	4.8	3.55	6.5	2
PH 14/7.5	14.4	11.6	6	3	7.5	6	9.5	3.3
PH 26/9.2	25.5	21.2	11.5	5.4	9.2	6.4	18	3.8

potcore half	mat. grade	cat. number potcore halves	cat. number coil former
PH5.6/3.6	3D3	4322 020 54210	4322 021 33540
PH7.4/3.9	3D3	4322 020 54510	4322 021 32990
PH9.4/4.8	3D3	4322 020 54710	4322 021 31700
PH14/7.5	3H1	4322 020 54800	4322 021 30250
PH26/9.2	3H1	4322 020 54900	4322 021 33700

**PHILIPS**

For detailed information on these and other types see Data Handbook C4/C5

E-cores are standardized to DIN 41295. They are used in a multitude of applications as power transformers or chokes. EF-cores have been dimensionally optimized for the use of ferrite, where E-cores have the same dimensions as metal lamination cores. We offer an extensive range in 3C8, 3C85, 3F3 and 3C11. For gapped cores see handbook C4/C5.

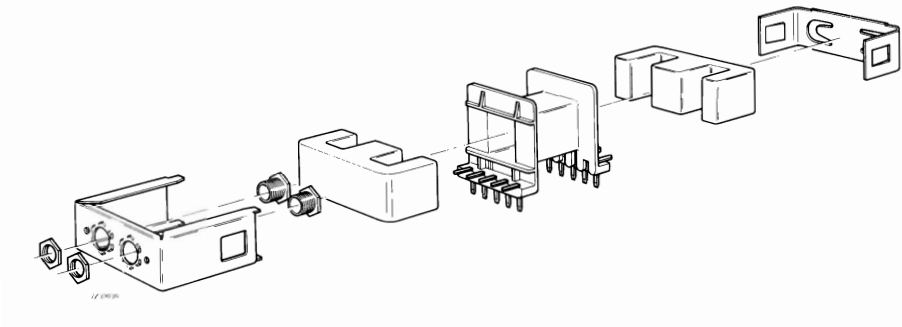


type	dimensions (mm)						magnetic parameters for a set of cores		
	A max	B max	C max	D min	E min	H min	Ve mm ³	Ae mm ²	le mm
E20/10/5	20.7	10.2	5.3	12.8	4.8	6.3	1340	31.2	42.8
E25/13/7	25.8	12.8	7.5	17.5	7.2	8.7	3160	55	57.5
E30/15/7	30.8	15.2	7.3	19.5	6.7	9.7	4000	59.7	66.9
E42/21/15	43.0	21.2	15.2	29.5	11.7	14.8	17600	182	97
E42/21/20	43.0	21.2	20.0	29.5	11.7	14.8	23100	236	98
E55/28/21	56.2	27.8	21.0	37.5	16.7	18.5	43700	354	123
E65/33/27	66.5	32.8	27.4	44.2	19.3	22.2	78200	532	147
EF12.6	13.1	6.5	3.7	8.9	3.4	4.5	384	13	29.6
EF16	17.3	8.2	4.7	11.3	4.4	5.7	754	20.1	29.6
EF20	20.4	10.2	5.9	14.1	5.5	7.0	1500	33.5	44.9
EF25	25.8	12.8	7.5	17.5	7.0	8.7	3020	52.5	57.5
EF32	32.9	16.4	9.5	22.7	8.9	11.2	6180	83	74

type	material grade			
	3C8	3C85	3F3	3C11
E20/10/5	4312 020 24070	4312 020 35640 4312 020 35650 4312 020 35910		4312 020 35970
E25/13/7	4312 020 34020			4312 020 35620
E30/15/7	4312 020 34550			4312 020 35080
E42/21/15	4312 020 34110			4312 020 35980
E42/21/20	4312 020 34120			
E55/28/21	4312 020 34100			
E65/33/27	4312 020 34380			
EF12.6	4312 020 34470			
EF16	4312 020 35550			
EF20	4312 020 35040			4312 020 35560
EF25	4312 020 34020			4312 020 35620
EF32	4312 020 35400			4312 020 34930



For detailed information on these and other types see Data Handbook C4/C5



Coil formers and mounting parts for E-cores

E-core type	catalogue number coil formers			catalogue number mounting parts	
	without pins	with pins		clasp	spring
		horizontal mounting	vertical mounting		
E20/10/5	4312 021 28430	4322 021 20240	4322 021 20290	4322 021 20160	4322 021 20220
E25/13/7	–	4312 021 28750	4312 021 28540	4312 021 26120	4312 021 26190
E30/15/7	4312 021 28550	4322 021 20250	–	4322 021 20170	4322 021 20230
E42/21/15	4312 021 28620	4322 021 31830	–	4322 021 31910	4322 021 31920
E55/28/21	4312 021 28710	–	–	4312 021 26090*	4312 021 26130*
E65/32/27	4312 021 28720	–	–	4312 021 26110*	4312 021 26140*
fixing-bush	4322 021 30720				
nut	4322 021 30710				

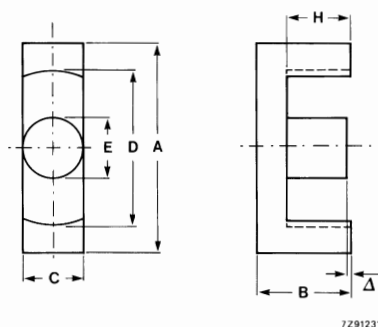
* Clasp and spring will be delivered as a set

For detailed information on these and other types see Data Handbook C4/C5

The ETD-series of high frequency power cores in Ferroxcube 3C8, 3C85 and 3F3 ferrite has been optimized to meet the current requirements of switched-mode power supplies.

Features

- Round centre pole for minimum conductor length.
- Maximum throughput power in the frequency range 20 to 500 kHz.
- Minimum core weight due to constant cross-sectional area proper choice of transition frequency.
- Winding breadth sufficient for full IEC mains isolation in specified configurations.
- Sufficient winding height for minimum loss windings.



7291231

type	dimensions (mm)						magnetic dimensions		
	A max	B max	C max	D min	E min	H min	Ve	Ae	le
ETD29/16/10	30.6	16	9.8	22	9.8	11.3	5470	76	72
ETD34/17/11	35	17.5	11.1	25.6	11.1	11.8	7640	97.1	78.6
ETD39/20/13	40	20	12.8	29.3	12.8	14.2	11500	125	92.2
ETD44/22/15	45	22.5	15.2	32.5	15.2	16.1	17800	173	103
ETD49/25/16	49.8	24.9	16.7	36.1	16.7	17.7	24000	211	114



Range of ungapped core halves

type	material grade		
	3C8	3C85	3F3
ETD29/16/10		4312 020 37500	
ETD34/17/11	4312 020 37000	4312 020 37200	
ETD39/20/13	4312 020 37050	4312 020 37250	
ETD44/22/15	4312 020 37100	4312 020 37300	
ETD49/25/16	4312 020 37150	4312 020 37350	

Ungapped core sets are also available (see handbook C4/C5).



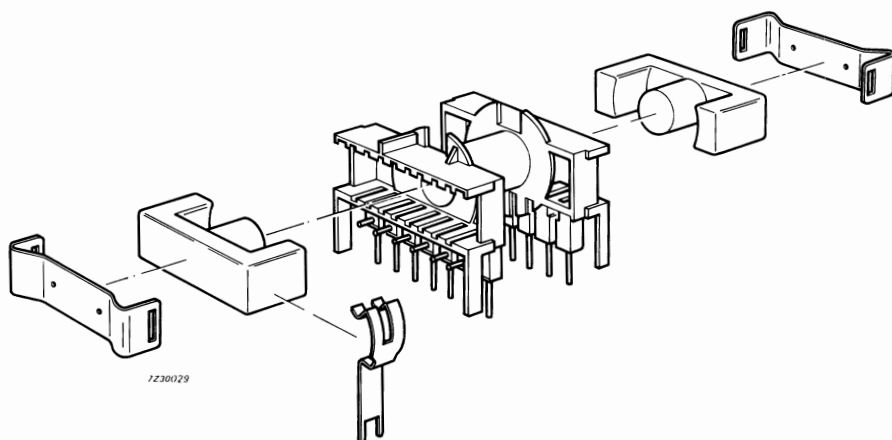
For detailed information on these and other types see Data Handbook C4/C5

Coil formers and clips

The PBTP coil former is suitable for single spindle or automatic machine winding. It is terminated after winding, to integral pins. The two cores are assembled to the coil former in one operation, as shown in figure below.

Two stainless steel clips retain the cores in the coil former assembly, maintaining adequate pressure at the mating pole faces.

The complete assembly is suitable for mounting on a printed-wiring board.



Coilformer material PBTP (UL94 – Vo, yellow card, number E45 329–M).
Clip material: stainless steel

type	coilformer		clip cat. number	earth clip cat. number
	no. of pins	cat. number		
ETD29/16/10		4322 021 34380	4322 021 34370	
ETD34/17/11	14	4322 021 33850	4322 021 33890	4322 021 33940
ETD39/20/13	16	4322 021 33860	4322 021 33900	4322 021 33950
ETD44/22/15	18	4322 021 33870	4322 021 33910	4322 021 33960
ETD49/25/16	20	4322 021 33880	4322 021 33920	4322 021 33970

Double (coaxial) coilformers for ETD34, fulfilling mains insulation requirements in flame retarding phenolformaldehyde (UL94 – Vo, yellow card number E63312–M).
Coilformer half for primary winding: 4322 021 34230
Coilformer half for secondary winding: 4322 021 34240



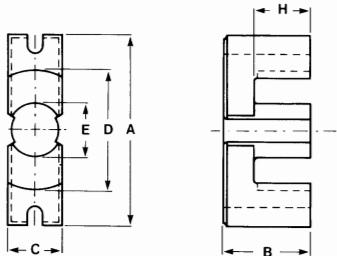
For detailed information on these and other types see Data Handbook C4/C5

EC-cores have a round centre pole to make strip winding easy, and ensuring a high copper factor and low leakage inductance; they meet the IEC65 standards for creepage distance (2 x 4 mm) and clearance between terminal pins and core.

type	dimensions (mm)						magnetic parameters		
	A max	B max	C max	D min	E min	H min	Ve mm ³	Ae mm ²	le mm
EC35/17/10	35.3	17.45	9.8	22.2	9.8	11.9	6530	84.3	77.4
EC41/19/12	41.6	19.65	11.9	26.3	11.9	13.5	10800	121	89.3
EC52/24/14	53.5	24.35	13.75	32.1	13.75	15.5	18800	180	105
EC70/34/17	71.7	34.65	16.8	43.3	16.8	22.3	40100	279	144

Range of ungapped core halves

type	material grade	
	3C8	3C85
EC35/17/10	4322 020 52500	
EC41/19/12	4322 020 52510	
EC52/24/14	4322 020 52520	
EC70/34/17	4322 020 52530	



Accessories

type	coil former				mounting parts (set)
	coil former cat.no.	no. of tags	mounting horizontal or vertical	cat. no. of tags	cat. no. of set
EC35/17/10	33410 33310	11 13	H H	—	26010
EC41/19/12	33010 33320 33350 33480 33490	— 9 9 12 21	— H V H H + V	33060	26020 without mounting stud 26030 with mounting stud
EC52/24/14	33020 33330 33360 33500	— 11 11 14	— H V H	33070	26040 without mounting stud 26050 with mounting stud
EC70/34/17	33030 33340 33370	— 15 15	— H V	33070	26060 without mounting stud 26070 with mounting stud

Coilformer of flame retarding PBTP (UL94 – Vo, yellow card number E45 329–M).



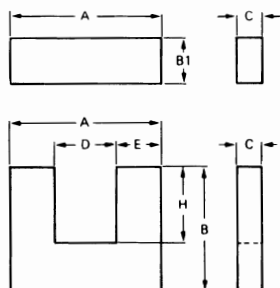
For detailed information on these and other types see Data Handbook C4/C5

U10, U15, U20, U25, U30 I15, I20, I25

These U-cores are for use in power supplies. Their excellent magnetic and electrical properties make them the designer's choice for small, light weight and highly efficient power supplies. U-cores are ideal in suppression applications. In case of pre-magnetisation, the influence of d.c. on the inductance of the choke can be reduced by using U-cores in combination with spacers to get an airgap.

U-I93, U-I100

High power to several kilowatts? Simple. Just stack up several U-cores into one big E-core with a square centre leg, or use UI and UU combinations. The result: low losses and high efficiency without weight penalty.



type	dimensions (mm)							magnetic parameters for a set of cores		
	A max	B max	B1 max	C max	D min	E min	H min	Ve mm ³	Ae mm ²	le mm
U10/8/3	10.2	8.2	—	3.0	4.05	2.75	5.0	331	8.6	38.4
U15/11/6	15.9	11.65	—	6.65	5	4.8	5.75	1440	30	48
U20/16/7	21.6	15.8	—	7.75	6	7.2	8	3800	56	68
U25/20/13	25.5	20	—	13.0	8	8	11	8600	100	86
U30/25/16	32	25.5	—	16.5	10	9.8	14.5	17400	157	111
U93/52/30	94.8	52.5	—	30.6	36.2	28	23.55	200000	780	254
I93/28/30	94.8	—	28	30.6	—	—	—	—	—	—
U93/76/16	94.8	76.5	—	16.5	36.2	28	47.1	147000	450	350
I93/28/16	94.8	—	28	30.6	—	—	—	—	—	—
U93/76/30	94.8	76.5	—	30.6	36.2	28	47.15	273000	780	350
U100/57/25	103.6	57.5	—	26.2	47	24.6	30.3	186000	620	300
I100/25/25	103.6	—	26.2	26.2	—	—	—	—	—	—
I15/2/3	15.3	—	2.9	2.9	—	—	—	—	—	—
I20/6/5	20.1	—	6.55	5.3	—	—	—	—	—	—
I25/7/7	25.5	—	7.75	7.75	—	—	—	—	—	—



For detailed information on these and other types see Data Handbook C4/C5

Ordering code for core range and accessories

type	material grade		
	3C8	3C11	coilformer
U10/8/3	3122 134 91160		4322 021 35701
U15/11/6	3122 134 90690		3122 134 02540
U20/16/7	4312 020 33510		3122 137 64140
U25/20/13	3122 134 90460		3122 137 61910
U30/25/16	3122 134 90760		3122 137 55360
U93/52/30	4312 020 33580		—
U93/76/30	4312 020 33570		—
U93/76/16	4312 020 33550		—
U100/57/25	4312 020 33600		—
I15/3/3	3122 134 90730		3122 134 02590
I20/6/5	3122 134 90720		3122 134 02540
I25/7/7	3122 134 90620		3122 137 64140
I93/28/16	4312 020 33560		—
I93/28/30	4312 020 33590		—
I100/28/25	4312 020 33610		—

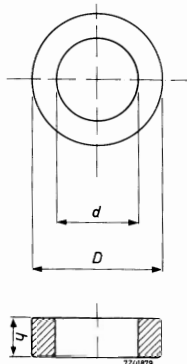


For detailed information on these and other types see Data Handbook C4/C5

Ring cores are widely used for pulse and broad band transformers. In the field of RFI-suppression an important application is as a current compensated choke.

When used as a power transformer the main advantages are the long winding length and the very weak stray field (3C85 and 3F3).

The special grade 3R1 is a rectangular loop ferrite suitable for magnetic amplifiers and spike suppression. Our extensive range of sizes includes types proposed in IEC 525 plus many other current sizes. The ring cores are isolated with a coat of nylon 11 (0.1 – 0.3 mm) to give good HV – isolation between core and winding (1.5 – 2 kV).



Range of ring cores (4330 030

size of non-coated ring D x d x h	material grade and colour code						
	violet 4C65	pink 4A11	red 3C85	blue 3F3	white 3C11	orange 3E25	black 3R1
2.5 x 1.5 x 1.0*	34680	34350		37880		37060	
4 x 2.2 x 1.1	34690	34360		37890		37350	
4 x 2.2 x 1.6*	34700	34370		34780		37070	
6 x 4 x 2	97160**	34380		37900		37080	
6.3 x 3.8 x 2.5*	34790	34870		34970			
9 x 6 x 3	97170**	34390		37910		37090	37680
10 x 6 x 4*	34810	34880		34980	34500	34580	
12.5 x 7.5 x 5*		34400	37790	37920	34920	37100	
14 x 9 x 5	97180**	34410	37450	37930	37460	37110	37690
14 x 9 x 9		34420	37800	37940		37120	
16 x 9.6 x 6.3*		34430	37810	37950	37180	37130	
19 x 10.6 x 10			34910		37470	37340	
19 x 10.6 x 15			37480		37490	37140	
20 x 10 x 7*	34820		34470		34510	34950	
23 x 14 x 7	97190**	34440	37500	34990	37510	37160	37700
25 x 15 x 10*			34480	35000	34520	34500	
26 x 14.5 x 10			37830		37520	37170	
26 x 14.5 x 20			37840		37530	37540	
29 x 19 x 7.5			37850		37580		
31.5 x 19 x 12.5*			34490	35010	34530	34510	
36 x 23 x 10	34710		37860		37550		
36 x 23 x 15*	97200**	34450	37870	35020	37560	34220	34310

* Proposed as European standard range

** 4322 020



PHILIPS

For detailed information on these and other types see Data Handbook C4/C5

These ring cores are made from electrolytic iron mixed with a small amount of resin to prevent excessive eddy currents. Due to their high saturation flux density (more than 1500 mT) they are very suitable for output chokes carrying high DC currents. The cores are coated with nylon 11 (0.1 – 0.3 mm thickness to give good HV insulation between core and winding (2 kV).



Range of cores (4330 030)

size excl. coating D x d x h	grade: µi: colour code:	2P40 40 ± 10% dark yellow	2P50 50 + + 10% dark blue	2P65 65 ± 10% dark red	2P80 80 ± 10% darg green	2P90 90 ± 10% dark brown
7.5 x 4.1 x 3		60010	60080	6150	60220	60290
12.3 x 8 x 4.4		60020	60090	60160	60230	60300
17.1 x 9.8 x 4.4		60030	60100	60170	60240	60310
19.9 x 12.9 x 6		60040	60110	60180	60250	60320
23.5 x 14.6 x 7.5		60050	60120	60190	60260	60330
26.5 x 14.9 x 10.7		60060	60130	60200	60270	—
32.6 x 20.2 x 10.7		60070	60140	60210	60280	—



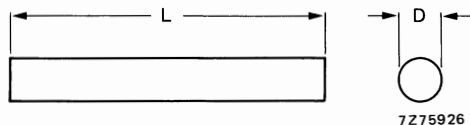
For detailed information on these and other types see Data Handbook C4/C5

Generally, ferrite rods are used as the core of solenoidal coils for two main applications:

- tuning: moving the core adjusts the coil to the required inductance value
- RFI-suppression: the inductance of the core is increased by the ferrite core

In cases where the RFI-suppression coil carries a high DC current the inductance will not be lowered much because the magnetic circuit is very open.

Curvature and mechanical tolerances of the standard range fulfill the requirements of DIN 41 291 or its equivalent IEC 233-1966.



Standard rod programme

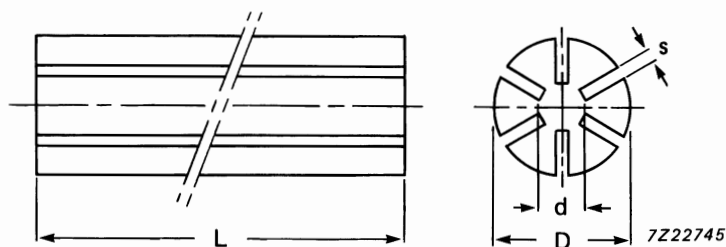
D diameter	tol. (-)	L length	tol.	6B1	3B1
2	0.05*	10	-0.6	4330 030 40210	4330 030 31330
2	0.05*	15	-0.8	4330 030 40220	4330 030 31340
2	0.05	20	-0.9	4330 030 40540	4330 030 31450
3	0.05	15	-0.8	4330 030 40230	4330 030 31350
3	0.05	20	-0.9	4330 030 40240	4330 030 31360
3	0.05	25	-1.0	4330 030 40550	4330 030 31470
4	0.05	15	-0.8	4330 030 40250	4330 030 31370
4	0.05	20	-0.9	4330 030 40260	4330 030 31380
4	0.05	25	-1.0	4330 030 40560	4330 030 31490
5	0.05	20	-0.9	4330 030 40270	4330 030 31390
5	0.05	25	-1.0	4330 030 40280	4330 030 31400
5	0.05	30	-1.2	4330 030 40570	4330 030 31510
6	0.10	30	-1.2	4330 030 40290	4330 030 31410
6	0.10	40	-1.6	4330 030 40300	4330 030 31420
6	0.10	50	± 1.0	4330 030 40580	4330 030 31530
8	0.40	50	± 1.0	4330 030 40310	4330 030 31430
8	0.40	150	± 3.0	4330 030 40320	4330 030 31440
8	0.40	200	± 4.0	4330 030 40590	4330 030 31550
10	0.50	200	± 4.0	4330 030 40600	4330 030 31460

* middle class DIN 41 921



For detailed information on these and other types see Data Handbook C4/C5

The features of a typical impeder core are high magnetic saturation flux density and low losses at the normal working conditions (commonly 100–500 kHz and 80–120°C). Slots in rods decrease the eddy current losses and have an additional cooling effect. Listed in the table are our preferred types.

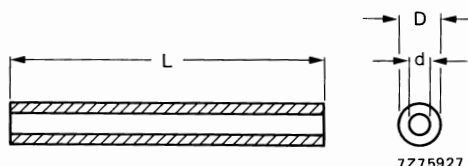


D	d	L	s	no. of slots	FXC grade	catalogue number
6 ± 0.2	3	200 ± 4	0.6	6	3D3	4330 030 31190
6 ± 0.2	3	200 ± 4	0.6	6	3C85	4330 030 31210
8 -0.5	3	125 ± 3.75	0.6	6	3D3	4330 030 30970
8 ± 0.5	3	200 ± 4	0.6	6	3C85	4330 030 31220
10 -0.5	4.5	170 ± 5	0.6	6	3D3	4330 030 30990
10 ± 0.25	4.5	200 ± 4	0.6	6	3C85	4330 030 31230
12 -0.7	5.5	170 ± 5	0.7	8	3D3	4330 030 31250
12 ± 0.35	5.5	200 ± 4	0.7	8	3C85	4330 030 31240
14.3 -0.8	6.5	170 ± 5	0.8	8	3D3	4330 030 31200
14.3 ± 0.4	6.5	200 ± 4	0.8	8	3C85	4330 030 31260

For detailed information on these and other types see Data Handbook C4/C5

Tubes can be used in solenoid coils to increase the inductance value. The effect is almost the same as with rods. In RFI applications tubes may also be shifted over wires. Because the magnetic flux path is then closed a steep increase in impedance will result. In such cases the sensitivity for DC currents however, may be rather high.

Curvature and mechanical tolerances of the standard range fulfil the requirements of DIN 41 291 or its equivalent IEC 233-1966.

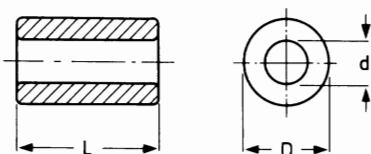


Standard rod programme

D O.D	tol. (-)	d I.D	tol. (+)	L	tol. (-)	6B1	3B1	3C85
3.5	0.25	1.2	0.15	5	0.3	4330 030 40330	4330 030 33450	4330 030 33670
3.5	0.25	1.2	0.15	15	0.8	4330 030 40340	4330 030 33550	4330 030 33680
4.0	0.25	1.6	0.15	15	0.8	4330 030 40350	4330 030 33560	4330 030 33690
4.0	0.25	1.6	0.15	40	1.6	4330 030 40360	4330 030 33570	4330 030 33700
5.0	0.30	2.0	0.20	15	0.8	4330 030 40370	4330 030 33580	4330 030 33710
5.0	0.30	2.0	0.20	50	± 1	4330 030 40380	4330 030 33590	4330 030 33720
6.0	0.30	3.0	0.20	20	0.9	4330 030 40390	4330 030 33600	4330 030 33730
6.0	0.30	3.0	0.20	30	1.2	4330 030 40400	4330 030 33610	4330 030 33740
8.0	0.40	4.0	0.30	20	0.9	4330 030 40410	4330 030 33620	4330 030 33750
8.0	0.40	4.0	0.30	40	1.6	4330 030 40420	4330 030 33630	4330 030 33760
8.0	0.40	4.0	0.30	200	± 4	-	-	4330 030 33450
10.0	0.50	4.2	0.30	20	0.9	4330 030 40430	4330 030 33640	4330 030 33770
10.0	0.50	4.2	0.30	45	1.8	4330 030 40440	4330 030 33650	4330 030 33780
10.0	0.50	5.0	0.40	200	± 4	-	-	4330 030 33460
10.0	0.50	6.5	0.40	20	0.9	4330 030 40450	4330 030 33660	4330 030 33791

For detailed information on these and other types see Data Handbook C4/C5

Thread the beads onto leads of a domestic appliance, or even a diode in a TV power supply, and perhaps it's all you need to meet the requirements for interference suppression. Special grades of materials have been developed for this application: 3S1 and 4S2. Minimum bead impedances are guaranteed at the frequencies in the table below. Beads are listed according to their magnetic effectiveness which is calculated by the formula $L \cdot \ln D/d$.



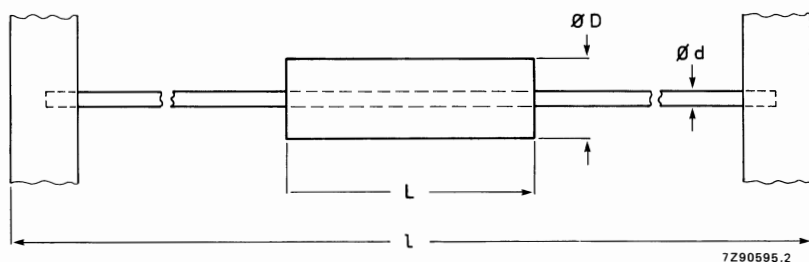
grade	frequency (MHz)						cat. number	dimensions			
	1	3	10	30	100	300		D	d	L	L ln(D/d)
	Z _s min. (Ω)										
3S1	10	18	24	20	17	15	4330 030 32180	5	2	4	3.3
	14	29	30	24	20	18	4330 030 32120	3	1	4	4.2
	10	20	32	26	22	20	4330 030 32160	5	1.5	4	4.5
	19	38	39	31	26	23	4330 030 32100	3	0.75	4	5.5
	27	52	53	42	36	32	4330 030 32140	5	0.75	4	7.2
	29	51	61	49	42	37	4330 030 32190	5	2	10	8.4
	33	72	73	58	50	44	4330 030 32130	3	1	10	10.5
	40	72	80	64	55	48	4330 030 32170	5	1.5	10	11.2
	58	95	97	77	66	58	4330 030 32110	3	0.75	10	13.2
70	125	128	90	70	50	4330 030 32150	5	0.75	10	18.0	
4S2	2	8	15	20	32	36	4330 030 33150	5	2	4	3.3
	2	8	15	22	34	38	4330 030 33180	8	3	4	3.8
	3	9	18	25	38	43	4330 030 33120	3	1	4	4.2
	3	10	20	27	41	47	4330 030 33140	5	1.5	4	4.5
	4	10	20	31	49	55	4330 030 33170	8	2	4	5.4
	2	8	22	32	50	54	4330 030 33110	3	0.75	4	5.5
	4	14	27	38	57	65	4330 030 33160	8	1.5	4	6.5
	5	15	30	44	68	77	4330 030 33130	5	0.75	4	7.2
	6	15	30	51	80	89	4330 030 33190	5	2	10	8.4
	6	20	40	55	85	95	4330 030 33200	8	3	10	9.5
	7	23	43	61	95	107	4330 030 33210	3	1	10	10.5
	7	25	45	68	104	116	4330 030 33220	5	1.5	10	11.2
	9	28	55	78	121	134	4330 030 33230	8	2	10	13.4
9	30	55	81	125	135	4330 030 33240	3	0.75	10	13.2	
10	34	70	93	145	161	4330 030 33250	8	1.5	10	16.3	
12	40	75	110	170	190	4330 030 33260	5	0.75	10	18.0	



RFI-suppression beads on wire

For detailed information on these and other types see Data Handbook C4/C5

Beads on wire are very suitable for suppressing unwanted signals between parts of a PC-board. They consist of a suppression bead fixed on a length of wire taped on a bandolier which will fit most commonly used automatic mounting machines.



grade	frequency (MHz)						cat. number	dimensions				tape standard
	1	3	10	30	100	300		D	d	L	l	
	Z min. (Ω)											
3S1	70	125	128	90	70	50	4330 030 33330	4.9	10	64.4	0.64	IEC 286 part 1 and EIA-RS-296-D
3S2	5	18	48	70	80	65	4330 030 38100	3.5	6	75.0	0.60	
3D3	11	36	100	130	80	60	4330 030 38110	4.0	11	75.0	0.60	
4S2	4	13	26	39	60	70	4330 030 38730	3.5	4.45	64.4	0.64	
4S2	5	17	35	53	80	95	4330 030 38740	3.5	6.0	64.4	0.64	
4S2	6	20	39	59	88	105	4330 030 38750	3.5	6.7	64.4	0.64	
4S2	7	22	44	67	105	120	4330 030 38760	3.5	7.6	64.4	0.64	
4S2	8	26	52	78	117	140	4330 030 38770	3.5	8.9	64.4	0.64	
4S2	3	10	19	29	46	52	4330 030 38810	3.5	3.25	64.4	0.64	



For detailed information on these and other types see Data Handbook C4/C5

Multi-hole tubes are used for small HF transformers for voltage or impedance matching in TV, communications, data transmission, instrumentation and similar applications.

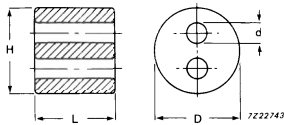


Fig. 1

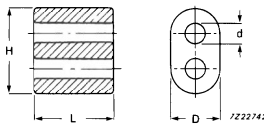


Fig. 2

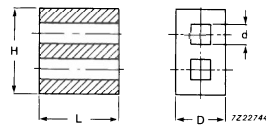


Fig. 3

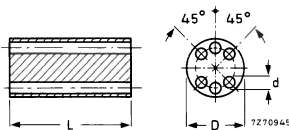


Fig. 4

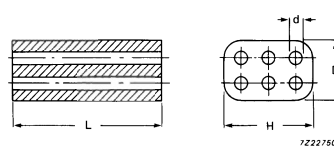


Fig. 5

fig.	D mm	d mm	L mm	H mm	grade	cat. number
1	5.6 ± 0.25	0.95 ± 0.15	4.5 - 0.5	-	4D1	3122 134 90800
	5.6 ± 0.15	1.5 ± 0.15	12 ± 0.2	-	4B1	4330 030 32740
	5.9 - 0.6	0.75 + 0.3	12.4 - 0.8	-	4B1	3122 104 90960
	6.6 - 0.6	1.05 + 0.3	5 ± 0.2	-	4B1	3122 104 94840
2	8.5 - 0.5	3.5 + 0.5	8 ± 0.3	14 + 0.5	4B1	4312 020 31570
	8.5 - 0.5	3.5 + 0.5	14 ± 0.4	14 + 0.5	4B1	4312 020 31520
2*	8 ± 0.3	3 ± 0.3	6 ± 0.3	13 ± 0.3	4B1	4313 020 40030
	8 ± 0.3	3 ± 0.3	6 ± 0.3	13 ± 0.3	3C85	4313 020 40050
3	5.4 ± 0.3	2 ± 0.3	10.9 ± 0.3	10.8 ± 0.3	4A11	4313 020 20570
	5.4 ± 0.3	2 ± 0.3	10.9 ± 0.3	10.8 ± 0.3	3C85	4313 020 20800

* chamfer in holes and sides

fig.	D mm	d mm	L mm	grade	cat. number
4	6 ± 0.3	0.7 + 0.2	10 ± 0.5	3B1	4312 020 31500
	6 ± 0.3	0.7 + 0.2	10 ± 0.5	4B1	4312 020 31550

fig.	D mm	d mm	H mm	L mm	grade	cat. number
5	4 ± 0.2	0.7 ± 0.3	6.1 ± 0.3	10 ± 0.5	3B1	4312 020 31530



For detailed information on these and other types see Data Handbook C4/C5

Wide band HF chokes are used for interference suppression, e.g. in electric motors. Double chokes are used for twin leads, in which case the advantage of mutual inductance can be utilized.

The chokes can be supplied with six axial holes through which 1.5, 2.5, or 2 x 1.5 (double chokes) turns of tinned copper wire are threaded.

The solderability of the leads is determined by the test TA, method 1 and ageing time as described in IEC 68-2-28.

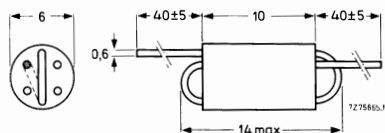


Fig. 1

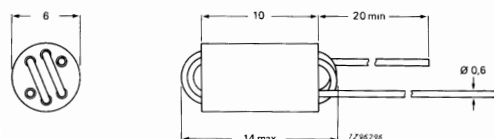


Fig. 3

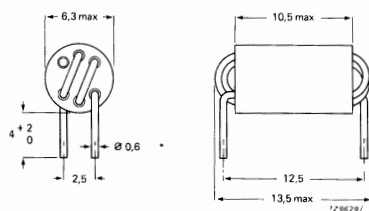


Fig. 2

number of turns	$Z_{\max}$ Ω	f at $Z_{\max}$ MHz	optimal frequency range MHz	grade	catalogue number
1.5	> 300	120	10-300	3B1	4312 020 36630
1.5	> 350	250	80-300	4B1	4312 020 36690
2.5	> 600	50	10-200	3B1	4312 020 36640
2.5	> 700	180	50-300	4B1	4312 020 36700
2 x 1.5	> 700	50	10-220	3B1	4312 020 36650
2 x 1.5	> 800	110	50-300	4B1	4312 020 36710

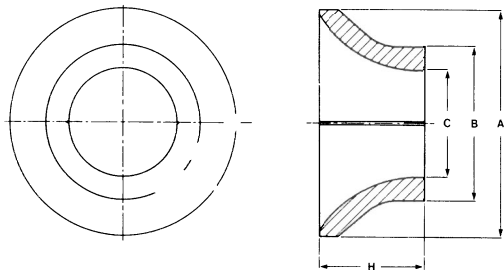
number of turns	fig.	grade	catalogue number
2.5	2	3B1	4330 030 38080
3	3	3B1	4312 020 36760
2.5	2	3B1	4330 030 38960*
2.5	2	3B1	4330 030 38990**

* with enamelled wire, pre-soldered

** with isolated body



For detailed information on these and other types see Data Handbook C5



status = C

application	grade	mass g	dimensions in mm				catalogue number
			A	B	C	H	
B/W							
90° (tiny vision)	2A2	62	47	37	29	26	3122 134 91680
110°	2A2	135	56.3	58	39.5	27.5	3122 134 91940
110°	3C2	135	56.3	58	39.5	26	3122 104 93840
110°	3C2	215	79	54	—	37	3122 134 90750
110° (tiny vision)	3C2	90	57	—	30.6	26.5	4313 020 35380
	3C2	196	74	54	38	37	4322 020 35070
90°	3C2	112	63	50	38	32	3122 134 90600
Data graphic display	3C2	364	94	58	46	54	3122 134 92030
Colour							
90°	2A2	235	92	60	48	46.5	3122 134 91610
90°	2A2	153	74	52	40	37	3122 134 92510
90° (39SW)	2A2	228	92	60	48	42	3122 134 92600
90° (51FS)	2A2	235	89	60	46.5	42	3122 134 92780
90° (36FS)	2A2	157	76	52	40	33	3122 134 93050
90°	2A2	268	84	60	48	42	3122 134 91440
90° (39SW)	2A2	225	92	66	51	36	3122 134 99370
110° (30AX)	3C2	505	138	73.5	60	57.6	3122 134 92500
110° (45AX)	3C2	367	113	65.5	49.5	44.8	3122 134 92750
Data graphic display	3C2	285	92	64.2	52	48	3122 134 92590
Data graphic display	3C2	760	132	—	51	87	3122 134 91850

