

PM 114/93 Core and accessories

Series/Type: B65733, B65734

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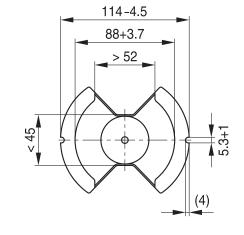
Core B65733

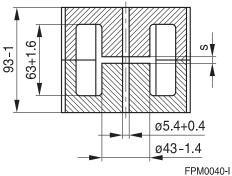
- To IEC 61247
- For power transformers
 >1 kW (20 kHz) and energy storage chokes
- Delivery mode: sets

Magnetic characteristics (per set)

 $\Sigma I/A = 0.116 \text{ mm}^{-1}$ $I_e = 200 \text{ mm}$ $A_e = 1720 \text{ mm}^2$ $A_{min} = 1380 \text{ mm}^2$ $V_e = 344000 \text{ mm}^3$

Approx. weight 1940 g/set





Gapped (AL values/air gaps examples)

Material	A _L value	s	μ_{e}	Ordering code
		approx.		
	nH	mm		
N27	630 ± 3%	3.80	58	B65733A0630A027
	6300 ±15%	0.22	583	B65733A6300L027

Ungapped

Material	A _L value	μ_{e}	P_V	Ordering code
	nH		W/set	
N27	16000 +30/–20%	1480	< 14.0 (100 mT, 25 kHz, 100 °C)	B65733A0000R027
N87	16000 +30/–20%	1480	< 10.0 (50 mT, 100 kHz, 100 °C)	B65733A0000R087

Other A_L values/air gaps and materials available on request – see Processing remarks on page 4.



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Accessories B65734

Coil former without solder pins

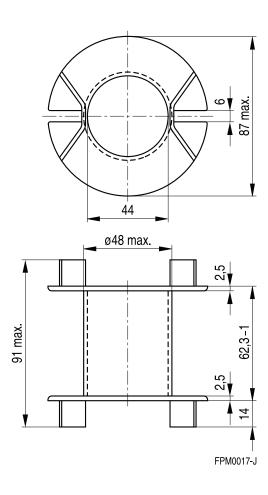
Material: Polyphenylene sulphide (UL 94 V-0, insulation class to IEC 85:

 $\mathsf{F} \triangleq \mathsf{max}.$ operating temperature 155 °C), color code black

Ryton R-4-230 [E95746 (M)] SOLVAY SPECIALITY POLYMERS

Winding: see Processing notes, 2.1

Sections	A _N mm ²	I _N mm	A_R value $\mu\Omega$	Ordering code
1	1070	210	6.75	B65734B1000T001





Cautions and warnings

Mechanical stress and mounting

Ferrite cores have to meet mechanical requirements during assembling and for a growing number of applications. Since ferrites are ceramic materials one has to be aware of the special behavior under mechanical load.

As valid for any ceramic material, ferrite cores are brittle and sensitive to any shock, fast temperature changing or tensile load. Especially high cooling rates under ultrasonic cleaning and high static or cyclic loads can cause cracks or failure of the ferrite cores.

For detailed information see data book, chapter "General - Definitions, 8.1".

Effects of core combination on A_I value

Stresses in the core affect not only the mechanical but also the magnetic properties. It is apparent that the initial permeability is dependent on the stress state of the core. The higher the stresses are in the core, the lower is the value for the initial permeability. Thus the embedding medium should have the greatest possible elasticity.

For detailed information see data book, chapter "General - Definitions, 8.1".

Heating up

Ferrites can run hot during operation at higher flux densities and higher frequencies.

NiZn-materials

The magnetic properties of NiZn-materials can change irreversible in high magnetic fields.

Ferrite Accessories

EPCOS ferrite accessories have been designed and evaluated only in combination with EPCOS ferrite cores. EPCOS explicitly points out that EPCOS ferrite accessories or EPCOS ferrite cores may not be compatible with those of other manufacturers. Any such combination requires prior testing by the customer and will be at the customer's own risk.

EPCOS assumes no warranty or reliability for the combination of EPCOS ferrite accessories with cores and other accessories from any other manufacturer.

Processing remarks

The start of the winding process should be soft. Else the flanges may be destroyed.

- Too strong winding forces may blast the flanges or squeeze the tube that the cores can not be mounted any more.
- Too long soldering time at high temperature (>300 °C) may effect coplanarity or pin arrangement.
- Not following the processing notes for soldering of the J-leg terminals may cause solderability
 problems at the transformer because of pollution with Sn oxyde of the tin bath or burned insulation of the wire. For detailed information see chapter "Processing notes", section 2.2.
- The dimensions of the hole arrangement have fixed values and should be understood as a recommendation for drilling the printed circuit board. For dimensioning the pins, the group of holes can only be seen under certain conditions, as they fit into the given hole arrangement. To avoid problems when mounting the transformer, the manufacturing tolerances for positioning the customers' drilling process must be considered by increasing the hole diameter.



Cautions and warnings

Display of ordering codes for EPCOS products

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Symbols and terms

Symbol	Meaning	Unit
A	Cross section of coil	mm ²
A_{e}	Effective magnetic cross section	mm ²
A_L	Inductance factor; $A_L = L/N^2$	nH
A_{L1}	Minimum inductance at defined high saturation ($\stackrel{\triangle}{=} \mu_a$)	nH
A_{min}	Minimum core cross section	mm ²
A_N	Winding cross section	mm ²
A_R	Resistance factor; $A_R = R_{Cu}/N^2$	$\mu\Omega = 10^{-6} \Omega$
В	RMS value of magnetic flux density	Vs/m ² , mT
ΔB	Flux density deviation	Vs/m ² , mT
Ê	Peak value of magnetic flux density	Vs/m ² , mT
$\Delta \hat{B}$	Peak value of flux density deviation	Vs/m ² , mT
B_DC	DC magnetic flux density	Vs/m ² , mT
B _R	Remanent flux density	Vs/m ² , mT
B_S	Saturation magnetization	Vs/m ² , mT
C_0	Winding capacitance	F = As/V
CDF	Core distortion factor	mm ^{-4.5}
DF	Relative disaccommodation coefficient DF = d/μ_i	
d	Disaccommodation coefficient	
Ea	Activation energy	J
f	Frequency	s ^{−1} , Hz
f _{cutoff}	Cut-off frequency	s−1, Hz
f _{max}	Upper frequency limit	s ^{−1} , Hz
f _{min}	Lower frequency limit	s−1, Hz
f_r	Resonance frequency	s ^{−1} , Hz
f_{Cu}	Copper filling factor	
g	Air gap	mm
Н	RMS value of magnetic field strength	A/m
Ĥ	Peak value of magnetic field strength	A/m
H_{DC}	DC field strength	A/m
H _c	Coercive field strength	A/m
h	Hysteresis coefficient of material	10 ⁻⁶ cm/A
h/μ_i^2	Relative hysteresis coefficient	10 ⁻⁶ cm/A
1	RMS value of current	Α
I_{DC}	Direct current	Α
Î	Peak value of current	Α
J	Polarization	Vs/m ²
k	Boltzmann constant	J/K
k_3	Third harmonic distortion	
k _{3c}	Circuit third harmonic distortion	
L	Inductance	H = Vs/A



Symbols and terms

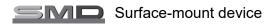
Symbol	Meaning	Unit
Δ L/L	Relative inductance change	Н
L_0	Inductance of coil without core	Н
L _H	Main inductance	Н
L_p	Parallel inductance	Н
L _{rev}	Reversible inductance	Н
L _s	Series inductance	Н
l _e	Effective magnetic path length	mm
I _N	Average length of turn	mm
N	Number of turns	
P_{Cu}	Copper (winding) losses	W
P _{trans}	Transferrable power	W
P _V	Relative core losses	mW/g
PF	Performance factor	
Q	Quality factor (Q = $\omega L/R_s$ = 1/tan δ_l)	
R	Resistance	Ω
R_{Cu}	Copper (winding) resistance (f = 0)	Ω
R _h	Hysteresis loss resistance of a core	Ω
ΔR_h	R _h change	Ω
R _i	Internal resistance	Ω
R _p	Parallel loss resistance of a core	Ω
R_s	Series loss resistance of a core	Ω
R _{th}	Thermal resistance	K/W
R _V	Effective loss resistance of a core	Ω
S	Total air gap	mm
Т	Temperature	°C
ΔT	Temperature difference	K
T_{C}	Curie temperature	°C
t	Time	s
t_v	Pulse duty factor	
tan δ	Loss factor	
tan δ_l	Loss factor of coil	
tan δ_r	(Residual) loss factor at H $ ightarrow$ 0	
tan $\delta_{\rm e}$	Relative loss factor	
tan δ_h	Hysteresis loss factor	
tan δ/μ _i	Relative loss factor of material at H \rightarrow 0	
U	RMS value of voltage	V
Û	Peak value of voltage	V
V _e	Effective magnetic volume	mm ³
Z	Complex impedance	Ω
Z _n	Normalized impedance $ Z _n = Z /N^2 \times \varepsilon (I_e/A_e)$	Ω/mm



Symbols and terms

Symbol	Meaning	Unit
α	Temperature coefficient (TK)	1/K
α_{F}	Relative temperature coefficient of material	
α_{e}	Temperature coefficient of effective permeability	
ϵ_{r}	Relative permittivity	
Φ	Magnetic flux	
η	Efficiency of a transformer	
η _B	Hysteresis material constant	mT-1
η _i	Hysteresis core constant	$A^{-1}H^{-1/2}$
$\lambda_{\sf s}$	Magnetostriction at saturation magnetization	
ı	Relative complex permeability	
ι_0	Magnetic field constant	
la	Relative amplitude permeability	
^l app	Relative apparent permeability	
le	Relative effective permeability	
ιį	Relative initial permeability	
ι _p '	Relative real (inductive) component of $\overline{\mu}$ (for parallel components)	
ι _p "	Relative imaginary (loss) component of $\overline{\mu}$ (for parallel components)	
ι_{r}	Relative permeability	
ι_{rev}	Relative reversible permeability	
ι _s '	Relative real (inductive) component of $\overline{\mu}$ (for series components)	
ι _s "	Relative imaginary (loss) component of $\overline{\mu}$ (for series components)	
ι_{tot}	Relative total permeability	
	derived from the static magnetization curve	
)	Resistivity	Ω m $^{-1}$
ΣΙ/A	Magnetic form factor	mm ⁻¹
^r Cu	DC time constant $\tau_{Cu} = L/R_{Cu} = A_L/A_R$	s
ω	Angular frequency; ω = 2 Π f	s ⁻¹

All dimensions are given in mm.





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The following applies to all products named in this publication:

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