DATA SHEET

E47/20/16
E cores and accessories

Supersedes data of September 2004 2008 Sep 01

FERROXCUBE
A YAGEO COMPANY

CORE SETS

Effective core parameters

SYMBOL	PARAMETER	VALUE	UNIT
$\Sigma(l/A)$	core factor (C1)	0.380	mm^{-1}
V_e	effective volume	20800	mm^3
l_e	effective length	88.9	mm
A_e	effective area	234	mm^2
A_{min}	minimum area	226	mm^2
m	mass of core half	≈ 53	g

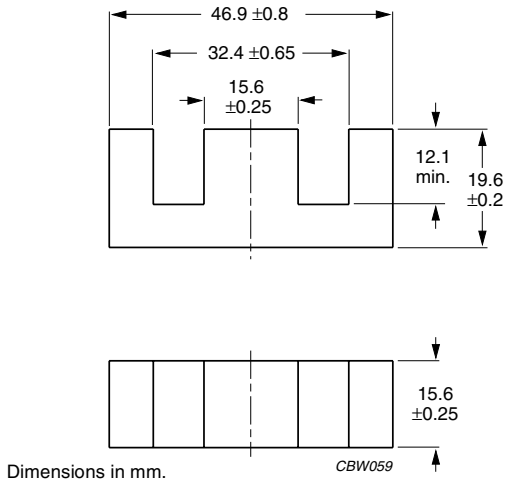


Fig.1 E47/20/16 core half.

Core halves

A_L measured in combination with a non-gapped core half, clamping force for A_L measurements 40 ±20 N, unless stated otherwise.

GRADE	A_L (nH)	μ_e	TOTAL AIR GAP (μm)	TYPE NUMBER
3C81	100 ±5%(1)	≈ 30	≈ 5080	E47/20/16-3C81-E100
	160 ±5%(1)	≈ 48	≈ 2720	E47/20/16-3C81-E160
	250 ±5%(1)	≈ 76	≈ 1540	E47/20/16-3C81-E250
	315 ±5%(1)	≈ 95	≈ 1140	E47/20/16-3C81-E315
	400 ±8%(1)	≈ 121	≈ 860	E47/20/16-3C81-E400
	630 ±10%	≈ 190	≈ 490	E47/20/16-3C81-A630
	7540 ±25%	≈ 2280	≈ 0	E47/20/16-3C81
3C90	100 ±5%(1)	≈ 30	≈ 5080	E47/20/16-3C90-E100
	160 ±5%(1)	≈ 48	≈ 2720	E47/20/16-3C90-E160
	250 ±5%(1)	≈ 76	≈ 1540	E47/20/16-3C90-E250
	315 ±5%(1)	≈ 95	≈ 1140	E47/20/16-3C90-E315
	400 ±8%(1)	≈ 121	≈ 860	E47/20/16-3C90-E400
	630 ±10%	≈ 190	≈ 490	E47/20/16-3C90-A630
	5500 ±25%	≈ 1660	≈ 0	E47/20/16-3C90
3C91 des	7540 ±25%	≈ 2280	≈ 0	E47/20/16-3C91
3C92 des	4400 ±25%	≈ 1330	≈ 0	E47/20/16-3C92
3C94	5600 ±25%	≈ 1690	≈ 0	E47/20/16-3C94
3C95 des	7540 ±25%	≈ 2280	≈ 0	E47/20/16-3C95

GRADE	A_L (nH)	μ_e	TOTAL AIR GAP (μm)	TYPE NUMBER
3F3	100 ±5%[1]	≈ 30	≈ 5080	E47/20/16-3F3-E100
	160 ±5%[1]	≈ 48	≈ 2720	E47/20/16-3F3-E160
	250 ±5%[1]	≈ 76	≈ 1540	E47/20/16-3F3-E250
	315 ±5%[1]	≈ 95	≈ 1140	E47/20/16-3F3-E315
	400 ±8%[1]	≈ 121	≈ 860	E47/20/16-3F3-E400
	630 ±10%	≈ 190	≈ 490	E47/20/16-3F3-A630
	5100 ±25%	≈ 1540	≈ 0	E47/20/16-3F3

Note

1. Measured in combination with an equal gapped core half.

Properties of core sets under power conditions

GRADE	B (mT) at	CORE LOSS (W) at				
	H = 250 A/m; f = 25 kHz; T = 100 °C	f = 25 kHz; $\hat{B}$ = 200 mT; T = 100 °C	f = 100 kHz; $\hat{B}$ = 100 mT; T = 100 °C	f = 100 kHz; $\hat{B}$ = 200 mT; T = 25 °C	f = 100 kHz; $\hat{B}$ = 200 mT; T = 100 °C	f = 400 kHz; $\hat{B}$ = 50 mT; T = 100 °C
3C81	≥320	≤ 4.3	–	–	–	–
3C90	≥320	≤ 2.3	≤ 2.7	–	–	–
3C91	≥320	–	≤ 1.7[1]	–	≤ 8.8[1]	–
3C92	≥370	–	≤ 2.1	–	≤ 11	–
3C94	≥320	–	≤ 2.1	–	≤ 11	–
3C95	≥320	–	–	≤ 13.1	≤ 12.5	–
3F3	≥320	–	≤ 2.5	–	–	≤ 4.0

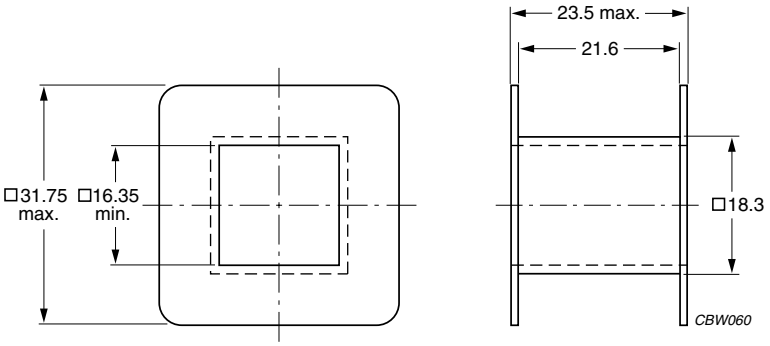
Note

1. Measured at 60 °C.

COIL FORMERS

General data for E47/20/16 coil former without pins

PARAMETER	SPECIFICATION
Coil former material	polyamide (PA6.6), glass reinforced, flame retardant in accordance with *"UL 94V-2"*; UL file number E41938(M)
Maximum operating temperature	130 °C, *"IEC 60085"*, class B



Dimensions in mm.

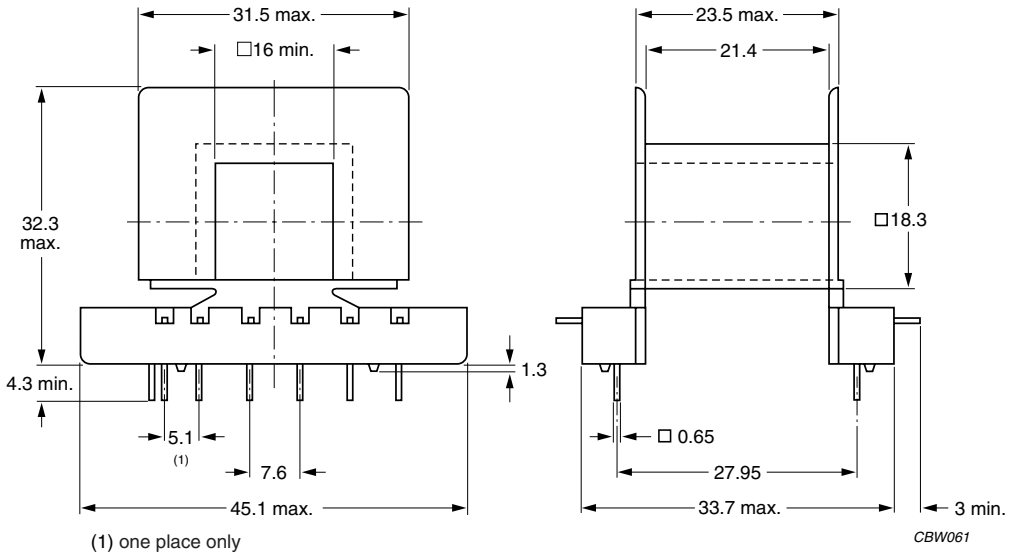
Fig.2 E47/20/16 coil former.

Winding data and area product for E47/20/16 coil former without pins

NUMBER OF SECTIONS	MINIMUM WINDING AREA (mm^2)	NOMINAL WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	AREA PRODUCT Ae x Aw (mm^4)	TYPE NUMBER
1	130	21.6	93.3	30400	CP-E47/20/16-1S

General data for 12-pins E47/20/16 coil former

PARAMETER	SPECIFICATION
Coil former material	polyamide (PA6.6), glass reinforced, flame retardant in accordance with *"UL 94-HB"*; UL file number E41938(M)
Maximum operating temperature	130 °C, *"IEC 60085",* class B
Pin material	copper-zinc alloy (CuZn), tin (Sn) plated
Resistance to soldering heat	*"IEC 60068-2-20"*, Part 2, Test Tb, method 1B: 350 °C, 3.5 s
Solderability	*"IEC 60068-2-20"*, Part 2, Test Ta, method 1: 235 °C, 2 s



Dimensions in mm.

Fig.3 E47/20/16 coil former: 12-pins.

Winding data and area product for 12-pins E47/20/16 coil former

NUMBER OF SECTIONS	MINIMUM WINDING AREA (mm^2)	NOMINAL WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	AREA PRODUCT Ae x Aw (mm^4)	TYPE NUMBER
1	131	21.4	94.7	30650	CPH-E47/16-1S-12PD-Z

DATA SHEET STATUS DEFINITIONS

DATA SHEET STATUS	PRODUCT STATUS	DEFINITIONS
Preliminary specification	Development	This data sheet contains preliminary data. Ferroxcube reserves the right to make changes at any time without notice in order to improve design and supply the best possible product.
Product specification	Production	This data sheet contains final specifications. Ferroxcube reserves the right to make changes at any time without notice in order to improve design and supply the best possible product.

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PRODUCT STATUS DEFINITIONS

STATUS	INDICATION	DEFINITION
Prototype	prot	These are products that have been made as development samples for the purposes of technical evaluation only. The data for these types is provisional and is subject to change.
Design-in	des	These products are recommended for new designs.
Preferred		These products are recommended for use in current designs and are available via our sales channels.
Support	sup	These products are **not** recommended for new designs and may not be available through all of our sales channels. Customers are advised to check for availability.