

# DATA SHEET

**E47/20/16**

**E cores and accessories**

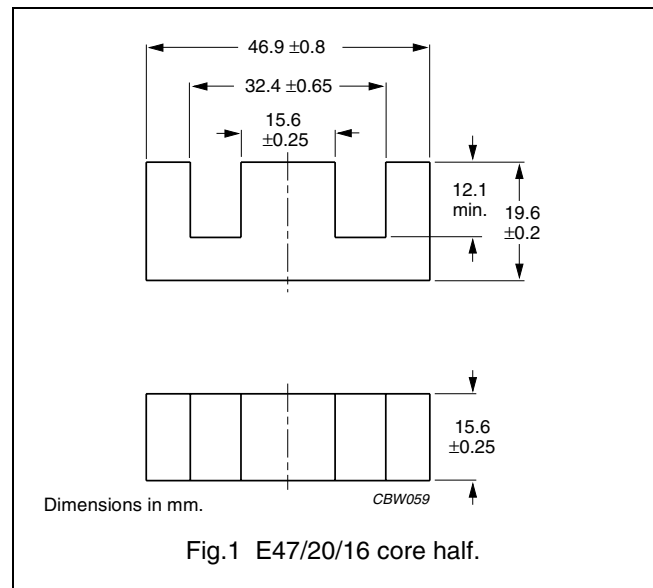
Supersedes data of September 2004

2008 Sep 01

**CORE SETS**

**Effective core parameters**

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



**Core halves**

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

GRADE	$A_L$ (nH)	$\mu_e$	TOTAL AIR GAP ( $\mu$ m)	TYPE NUMBER
3C81	100 ± 5% <sup>(1)</sup>	≈ 30	≈ 5080	E47/20/16-3C81-E100
	160 ± 5% <sup>(1)</sup>	≈ 48	≈ 2720	E47/20/16-3C81-E160
	250 ± 5% <sup>(1)</sup>	≈ 76	≈ 1540	E47/20/16-3C81-E250
	315 ± 5% <sup>(1)</sup>	≈ 95	≈ 1140	E47/20/16-3C81-E315
	400 ± 8% <sup>(1)</sup>	≈ 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% <sup>(1)</sup>	≈ 30	≈ 5080	E47/20/16-3C90-E100
	160 ± 5% <sup>(1)</sup>	≈ 48	≈ 2720	E47/20/16-3C90-E160
	250 ± 5% <sup>(1)</sup>	≈ 76	≈ 1540	E47/20/16-3C90-E250
	315 ± 5% <sup>(1)</sup>	≈ 95	≈ 1140	E47/20/16-3C90-E315
	400 ± 8% <sup>(1)</sup>	≈ 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 <span style="background-color: black; color: white; padding: 0 2px;">des</span>	7540 ± 25%	≈ 2280	≈ 0	E47/20/16-3C91
3C92 <span style="background-color: black; color: white; padding: 0 2px;">des</span>	4400 ± 25%	≈ 1330	≈ 0	E47/20/16-3C92
3C94	5600 ± 25%	≈ 1690	≈ 0	E47/20/16-3C94
3C95 <span style="background-color: black; color: white; padding: 0 2px;">des</span>	7540 ± 25%	≈ 2280	≈ 0	E47/20/16-3C95

## E cores and accessories

E47/20/16

GRADE	$A_L$ (nH)	$\mu_e$	TOTAL AIR GAP ( $\mu\text{m}$ )	TYPE NUMBER
3F3	$100 \pm 5\%^{(1)}$	$\approx 30$	$\approx 5080$	E47/20/16-3F3-E100
	$160 \pm 5\%^{(1)}$	$\approx 48$	$\approx 2720$	E47/20/16-3F3-E160
	$250 \pm 5\%^{(1)}$	$\approx 76$	$\approx 1540$	E47/20/16-3F3-E250
	$315 \pm 5\%^{(1)}$	$\approx 95$	$\approx 1140$	E47/20/16-3F3-E315
	$400 \pm 8\%^{(1)}$	$\approx 121$	$\approx 860$	E47/20/16-3F3-E400
	$630 \pm 10\%$	$\approx 190$	$\approx 490$	E47/20/16-3F3-A630
	$5100 \pm 25\%$	$\approx 1540$	$\approx 0$	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	$\geq 320$	$\leq 4.3$	–	–	–	–
3C90	$\geq 320$	$\leq 2.3$	$\leq 2.7$	–	–	–
3C91	$\geq 320$	–	$\leq 1.7^{(1)}$	–	$\leq 8.8^{(1)}$	–
3C92	$\geq 370$	–	$\leq 2.1$	–	$\leq 11$	–
3C94	$\geq 320$	–	$\leq 2.1$	–	$\leq 11$	–
3C95	$\geq 320$	–	–	$\leq 13.1$	$\leq 12.5$	–
3F3	$\geq 320$	–	$\leq 2.5$	–	–	$\leq 4.0$

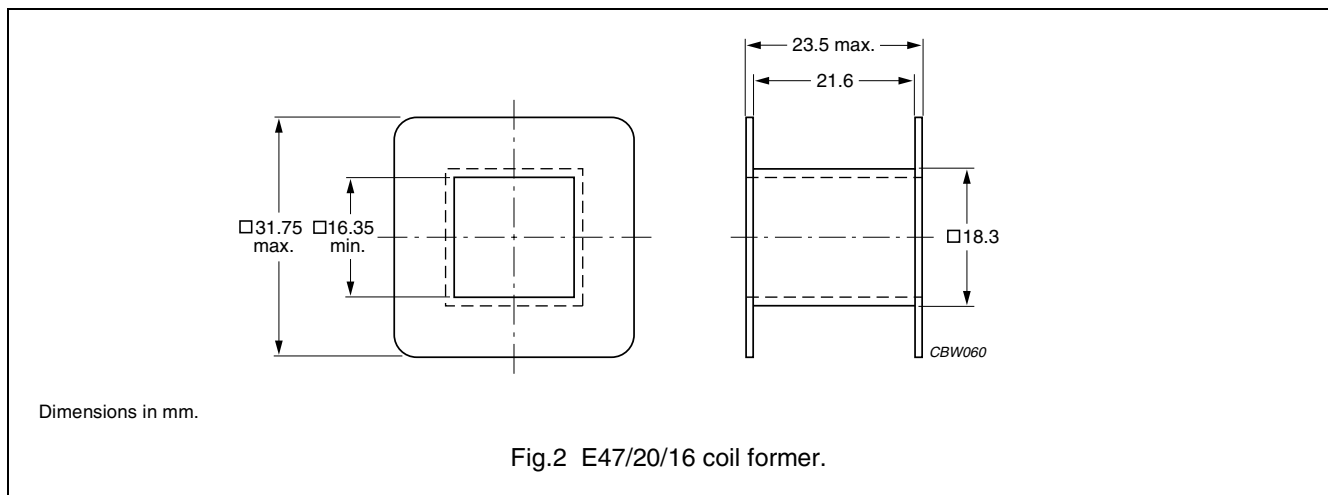
**Note**

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

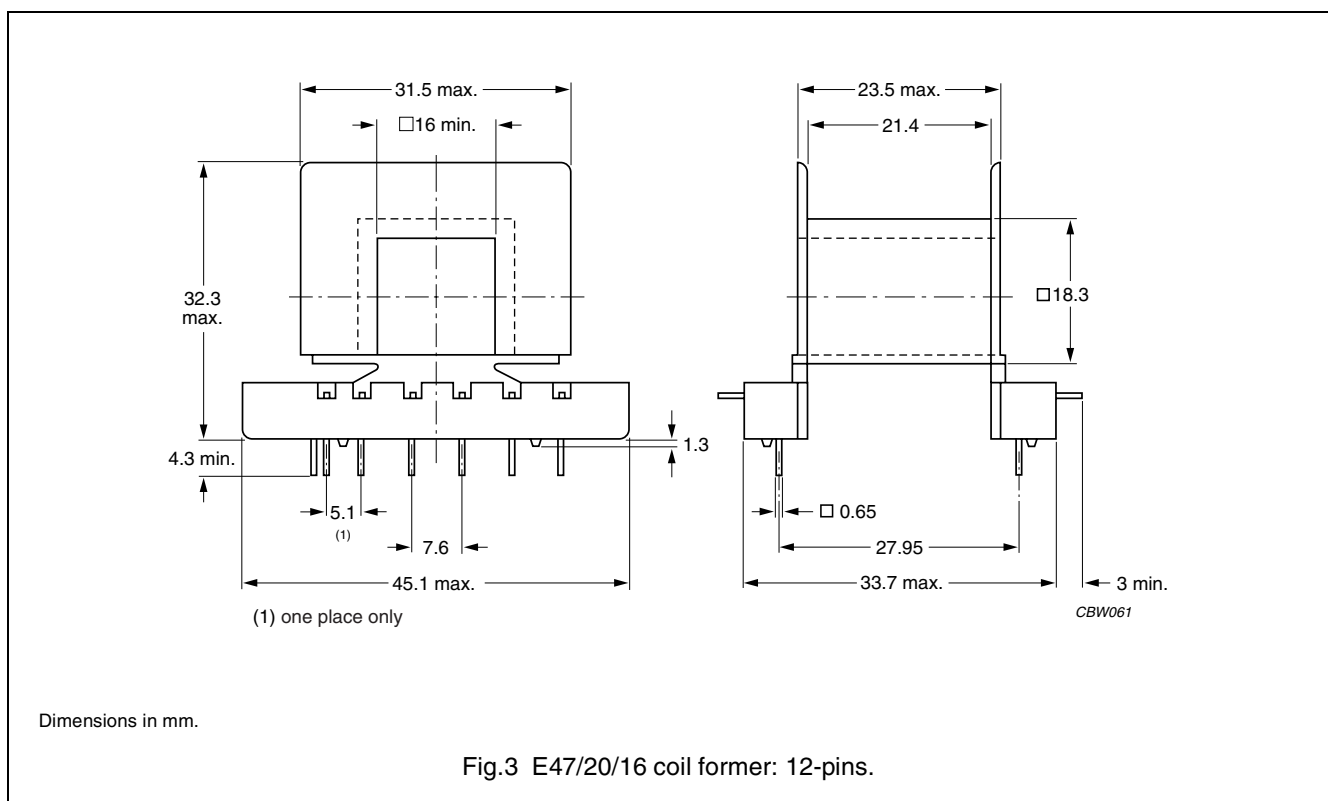


**Winding data and area product for E47/20/16 coil former without pins**

NUMBER OF SECTIONS	MINIMUM WINDING AREA (mm <sup>2</sup> )	NOMINAL WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	AREA PRODUCT Ae x Aw (mm <sup>4</sup> )	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



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

NUMBER OF SECTIONS	MINIMUM WINDING AREA (mm <sup>2</sup> )	NOMINAL WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	AREA PRODUCT Ae x Aw (mm <sup>4</sup> )	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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**Life support applications** — These products are not designed for use in life support appliances, devices, or systems where malfunction of these products can reasonably be expected to result in personal injury. Ferroxcube customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Ferroxcube for any damages resulting from such application.

**PRODUCT STATUS DEFINITIONS**

STATUS	INDICATION	DEFINITION
<b>Prototype</b>		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.
<b>Design-in</b>		These products are recommended for new designs.
<b>Preferred</b>		These products are recommended for use in current designs and are available via our sales channels.
<b>Support</b>		These products are <b>not</b> recommended for new designs and may not be available through all of our sales channels. Customers are advised to check for availability.