

# DATA SHEET

**E42/21/20**

**E cores and accessories**

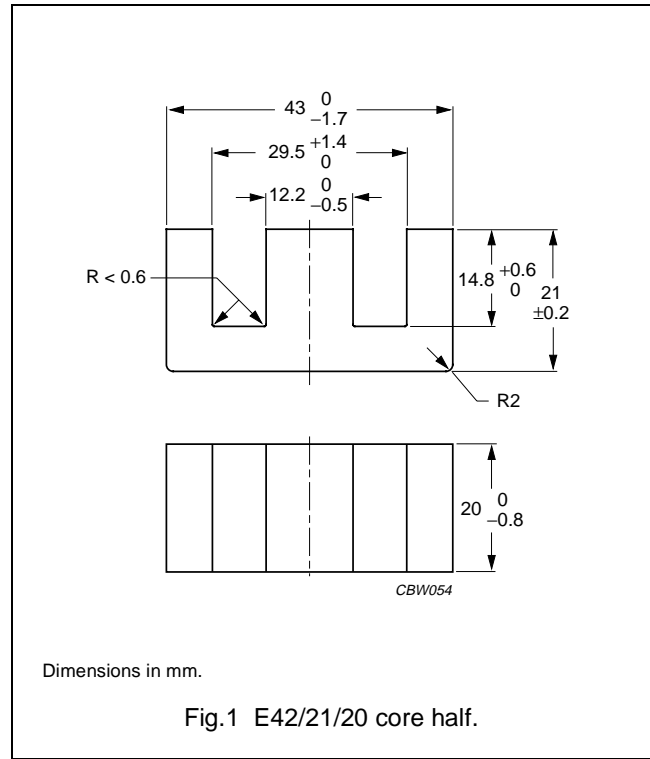
Supersedes data of February 2002

2004 Sep 01

**CORE SETS**

**Effective core parameters**

SYMBOL	PARAMETER	VALUE	UNIT
$\Sigma(l/A)$	core factor (C1)	0.417	mm <sup>-1</sup>
$V_e$	effective volume	22700	mm <sup>3</sup>
$l_e$	effective length	97.0	mm
$A_e$	effective area	233	mm <sup>2</sup>
$A_{min}$	minimum area	233	mm <sup>2</sup>
$m$	mass of core half	≈ 56	g



**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)	$\mu_e$	AIR GAP (μm)	TYPE NUMBER
3C81	100 ± 5% <sup>(1)</sup>	≈ 33	≈ 5320	E42/21/20-3C81-E100
	160 ± 5% <sup>(1)</sup>	≈ 53	≈ 2800	E42/21/20-3C81-E160
	250 ± 5% <sup>(1)</sup>	≈ 83	≈ 1540	E42/21/20-3C81-E250
	315 ± 5% <sup>(1)</sup>	≈ 104	≈ 1160	E42/21/20-3C81-E315
	400 ± 8%	≈ 133	≈ 850	E42/21/20-3C81-A400
	630 ± 15%	≈ 209	≈ 490	E42/21/20-3C81-A630
	6950 ± 25%	≈ 2300	≈ 0	E42/21/20-3C81
3C90	100 ± 5% <sup>(1)</sup>	≈ 33	≈ 5320	E42/21/20-3C90-E100
	160 ± 5% <sup>(1)</sup>	≈ 53	≈ 2800	E42/21/20-3C90-E160
	250 ± 5% <sup>(1)</sup>	≈ 83	≈ 1540	E42/21/20-3C90-E250
	315 ± 5% <sup>(1)</sup>	≈ 104	≈ 1160	E42/21/20-3C90-E315
	400 ± 8%	≈ 133	≈ 850	E42/21/20-3C90-A400
	630 ± 15%	≈ 209	≈ 490	E42/21/20-3C90-A630
	5000 ± 25%	≈ 1660	≈ 0	E42/21/20-3C90
3C91 <small>des</small>	6950 ± 25%	≈ 2300	≈ 0	E42/21/20-3C91
3C92 <small>des</small>	4100 ± 25%	≈ 1360	≈ 0	E42/21/20-3C92
3C94	5200 ± 25%	≈ 1720	≈ 0	E42/21/20-3C94

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E42/21/20

GRADE	$A_L$ (nH)	$\mu_e$	AIR GAP ( $\mu\text{m}$ )	TYPE NUMBER
3F3	$100 \pm 5\%^{(1)}$	$\approx 33$	$\approx 5320$	E42/21/20-3F3-E100
	$160 \pm 5\%^{(1)}$	$\approx 53$	$\approx 2800$	E42/21/20-3F3-E160
	$250 \pm 5\%^{(1)}$	$\approx 83$	$\approx 1540$	E42/21/20-3F3-E250
	$315 \pm 5\%^{(1)}$	$\approx 104$	$\approx 1160$	E42/21/20-3F3-E315
	$400 \pm 8\%$	$\approx 133$	$\approx 850$	E42/21/20-3F3-A400
	$630 \pm 15\%$	$\approx 209$	$\approx 490$	E42/21/20-3F3-A630
	$4600 \pm 25\%$	$\approx 1520$	$\approx 0$	E42/21/20-3F3

**Note**

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

**Core halves of high permeability grades**Clamping force for  $A_L$  measurements  $40 \pm 20$  N.

GRADE	$A_L$ (nH)	$\mu_e$	AIR GAP ( $\mu\text{m}$ )	TYPE NUMBER
3E27	$10500 \pm 25\%$	$\approx 3480$	$\approx 0$	E42/21/20-3E27

**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 = 100 °C	f = 400 kHz; $\hat{B} = 50$ mT; T = 100 °C
3C81	$\geq 320$	$\leq 4.7$	–	–	–
3C90	$\geq 320$	$\leq 2.4$	$\leq 2.9$	–	–
3C91	$\geq 320$	–	$\leq 1.8^{(1)}$	$\leq 9.4^{(1)}$	–
3C92	$\geq 370$	–	$\leq 2.3$	$\leq 12$	–
3C94	$\geq 320$	–	$\leq 2.3$	$\leq 12$	–
3F3	$\geq 320$	–	$\leq 2.7$	–	$\leq 5.0$

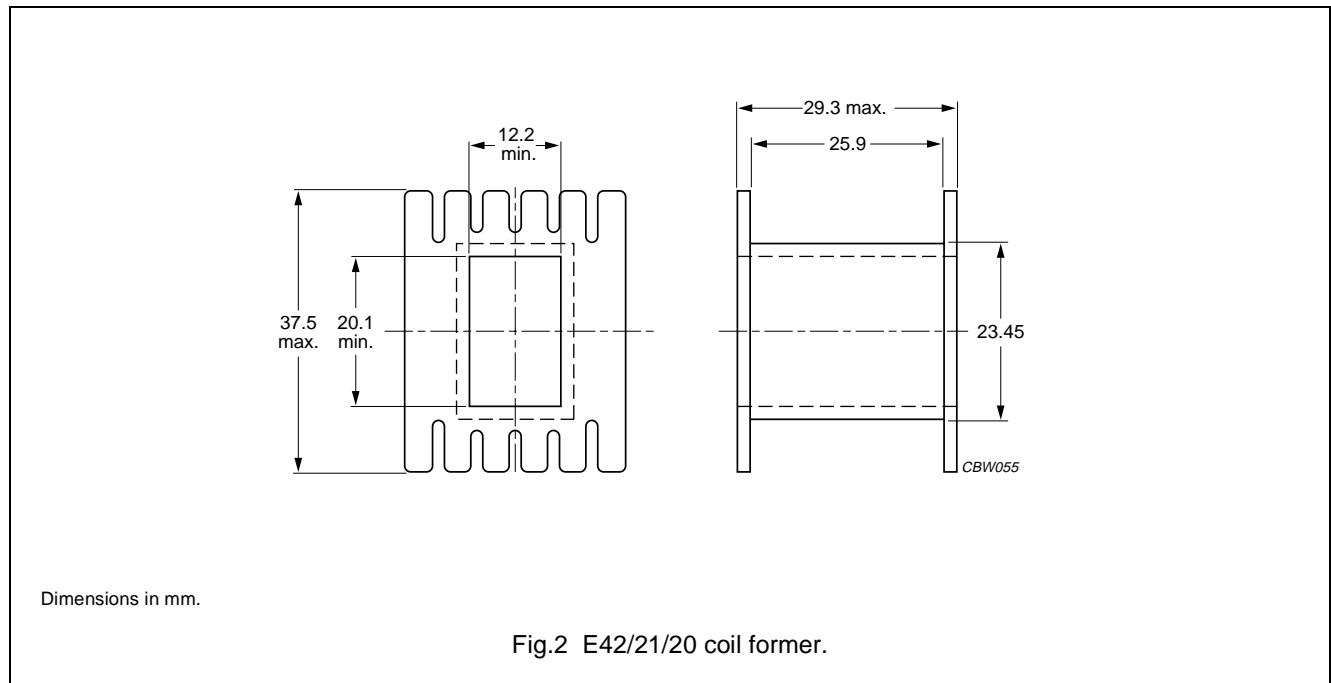
**Note**

1. Measured at 60 °C.

**COIL FORMER**

**General data for E42/21/20 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	105 °C, "IEC 60085", class A

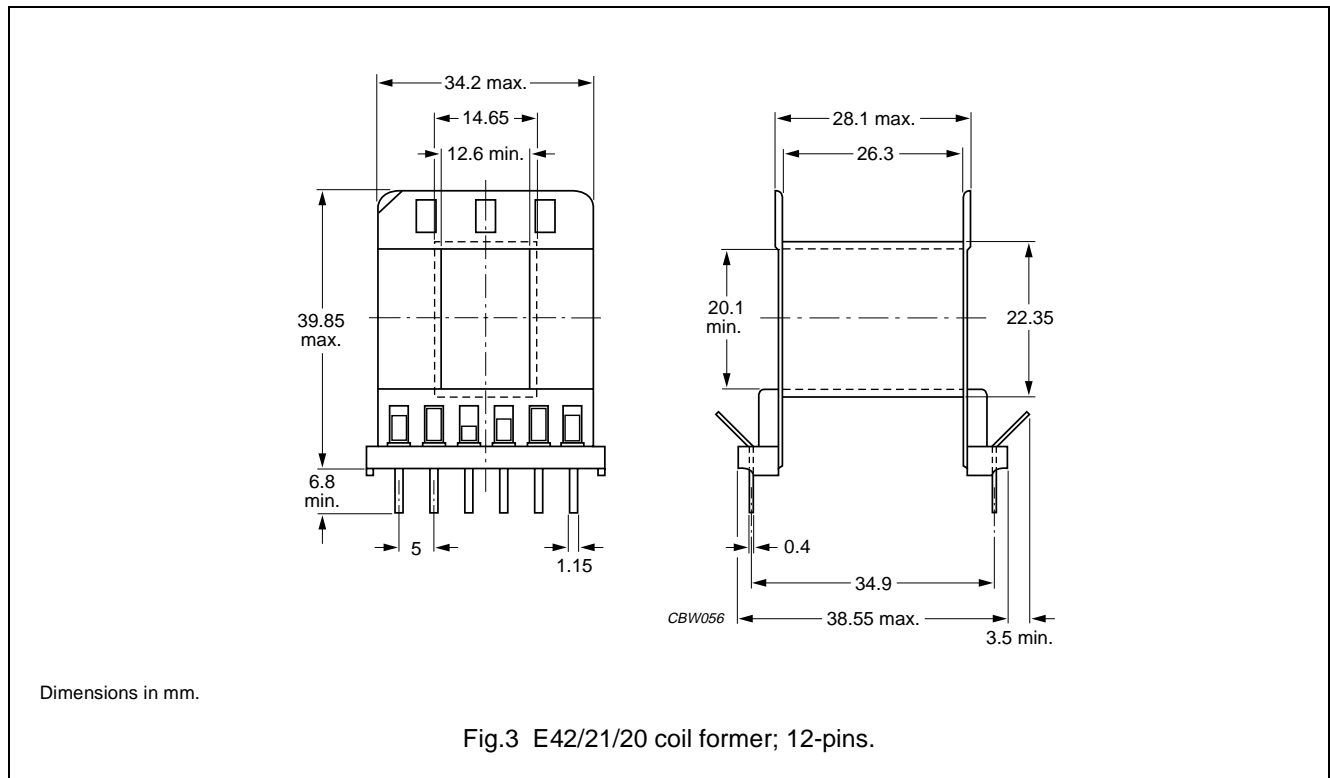


**Winding data for E42/21/20 coil former without pins**

NUMBER OF SECTIONS	MINIMUM WINDING AREA (mm <sup>2</sup> )	NOMINAL WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	TYPE NUMBER
1	173	25.9	100	CP-E42/21/20-1S

**General data for 12-pins E42/21/20 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)
Pin material	copper-tin alloy (CuSn), tin-lead alloy (SnPb) plated, transition to lead-free (Sn) ongoing.
Maximum operating temperature	105 °C, "IEC 60085", class A
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 for 12-pins E42/21/20 coil former**

NUMBER OF SECTIONS	MINIMUM WINDING AREA (mm <sup>2</sup> )	NOMINAL WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	TYPE NUMBER
1	255	26.3	78.5	CPH-E42/20-1S-12PD

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E42/21/20




## 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
<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.