

# DATA SHEET

**E42/21/15**

**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)	0.548	mm <sup>-1</sup>
$V_e$	effective volume	17300	mm <sup>3</sup>
$l_e$	effective length	97.0	mm
$A_e$	effective area	178	mm <sup>2</sup>
$A_{min}$	minimum area	175	mm <sup>2</sup>
m	mass of core half	≈ 44	g

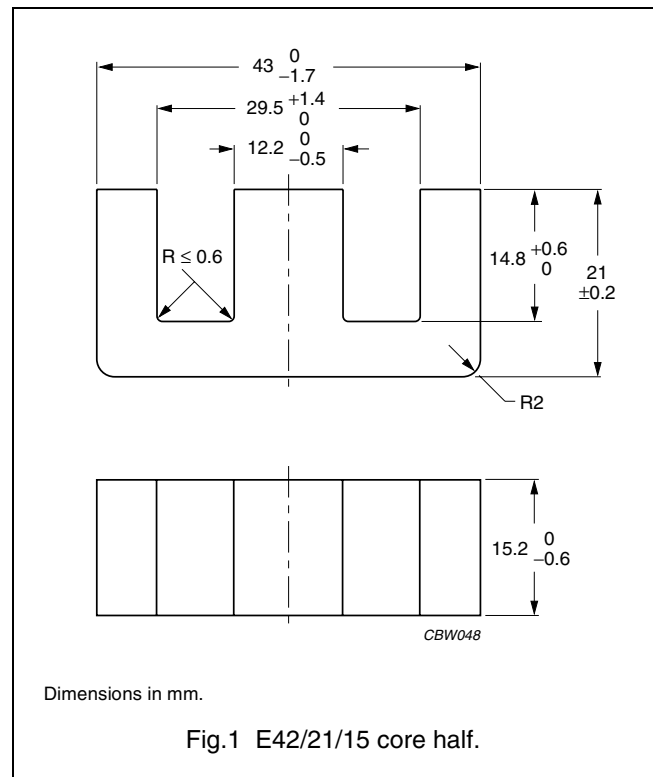


Fig.1 E42/21/15 core half.

**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)	$\mu_e$	TOTAL AIR GAP (μm)	TYPE NUMBER
3C81	100 ±5% <sup>(1)</sup>	≈ 43	≈ 3960	E42/21/15-3C81-E100
	160 ±5% <sup>(1)</sup>	≈ 69	≈ 2060	E42/21/15-3C81-E160
	250 ±5% <sup>(1)</sup>	≈ 108	≈ 1140	E42/21/15-3C81-E250
	315 ±5%	≈ 137	≈ 850	E42/21/15-3C81-A315
	400 ±8%	≈ 173	≈ 630	E42/21/15-3C81-A400
	630 ±15%	≈ 273	≈ 360	E42/21/15-3C81-A630
	5300 ±25%	≈ 2300	≈ 0	E42/21/15-3C81
3C90	100 ±5% <sup>(1)</sup>	≈ 43	≈ 3960	E42/21/15-3C90-E100
	160 ±5% <sup>(1)</sup>	≈ 69	≈ 2060	E42/21/15-3C90-E160
	250 ±5% <sup>(1)</sup>	≈ 108	≈ 1140	E42/21/15-3C90-E250
	315 ±5%	≈ 137	≈ 850	E42/21/15-3C90-A315
	400 ±8%	≈ 173	≈ 630	E42/21/15-3C90-A400
	630 ±15%	≈ 273	≈ 360	E42/21/15-3C90-A630
	3950 ±25%	≈ 1710	≈ 0	E42/21/15-3C90
3C91 <span style="border: 1px solid black; padding: 0 2px;">des</span>	5300 ±25%	≈ 2300	≈ 0	E42/21/15-3C91
3C92 <span style="border: 1px solid black; padding: 0 2px;">des</span>	3100 ±25%	≈ 1350	≈ 0	E42/21/15-3C92
3C94	4100 ±25%	≈ 1780	≈ 0	E42/21/15-3C94

GRADE	$A_L$ (nH)	$\mu_e$	TOTAL AIR GAP ( $\mu\text{m}$ )	TYPE NUMBER
3C95 <small>des</small>	5300 $\pm$ 25%	$\approx$ 2300	$\approx$ 0	E42/21/15-3C95
3F3	100 $\pm$ 5% <sup>(1)</sup>	$\approx$ 43	$\approx$ 3960	E42/21/15-3F3-E100
	160 $\pm$ 5% <sup>(1)</sup>	$\approx$ 69	$\approx$ 2060	E42/21/15-3F3-E160
	250 $\pm$ 5% <sup>(1)</sup>	$\approx$ 108	$\approx$ 1140	E42/21/15-3F3-E250
	315 $\pm$ 5%	$\approx$ 137	$\approx$ 850	E42/21/15-3F3-A315
	400 $\pm$ 8%	$\approx$ 173	$\approx$ 630	E42/21/15-3F3-A400
	630 $\pm$ 15%	$\approx$ 273	$\approx$ 360	E42/21/15-3F3-A630
	3600 $\pm$ 25%	$\approx$ 1560	$\approx$ 0	E42/21/15-3F3

**Note**

1. Measured in combination with an equal gapped core half, clamping force for  $A_L$  measurements, 40  $\pm$ 20 N.

**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	$\leq$ 3.6	–	–	–	–
3C90	$\geq$ 320	$\leq$ 1.9	$\leq$ 2.2	–	–	–
3C91	$\geq$ 320	–	$\leq$ 1.3 <sup>(1)</sup>	–	$\leq$ 7.0 <sup>(1)</sup>	–
3C92	$\geq$ 370	–	$\leq$ 1.7	–	$\leq$ 8.8	–
3C94	$\geq$ 320	–	$\leq$ 1.7	–	$\leq$ 8.8	–
3C95	$\geq$ 320	–	–	$\leq$ 10.9	$\leq$ 10.4	–
3F3	$\geq$ 320	–	$\leq$ 2.2	–	–	$\leq$ 3.8

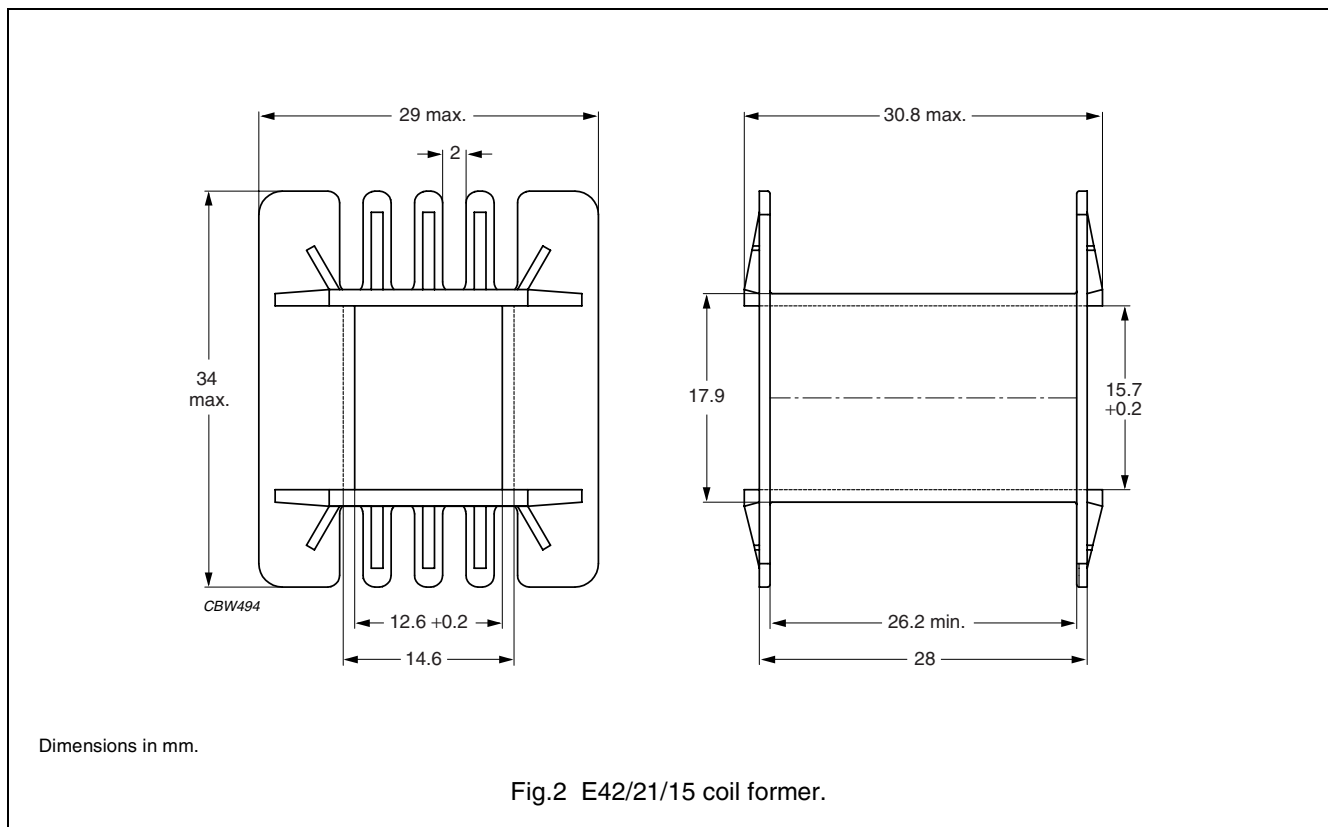
**Note**

1. Measured at 60 °C.

**COIL FORMERS**

**General data for E42/21/15 coil former without pins**

PARAMETER	SPECIFICATION
Coil former material	polybutyleneterephthalate (PBT), glass reinforced, flame retardant in accordance with "UL 94V-0"; UL file number E45329(R)
Maximum operating temperature	155 °C, "IEC 60085", class F

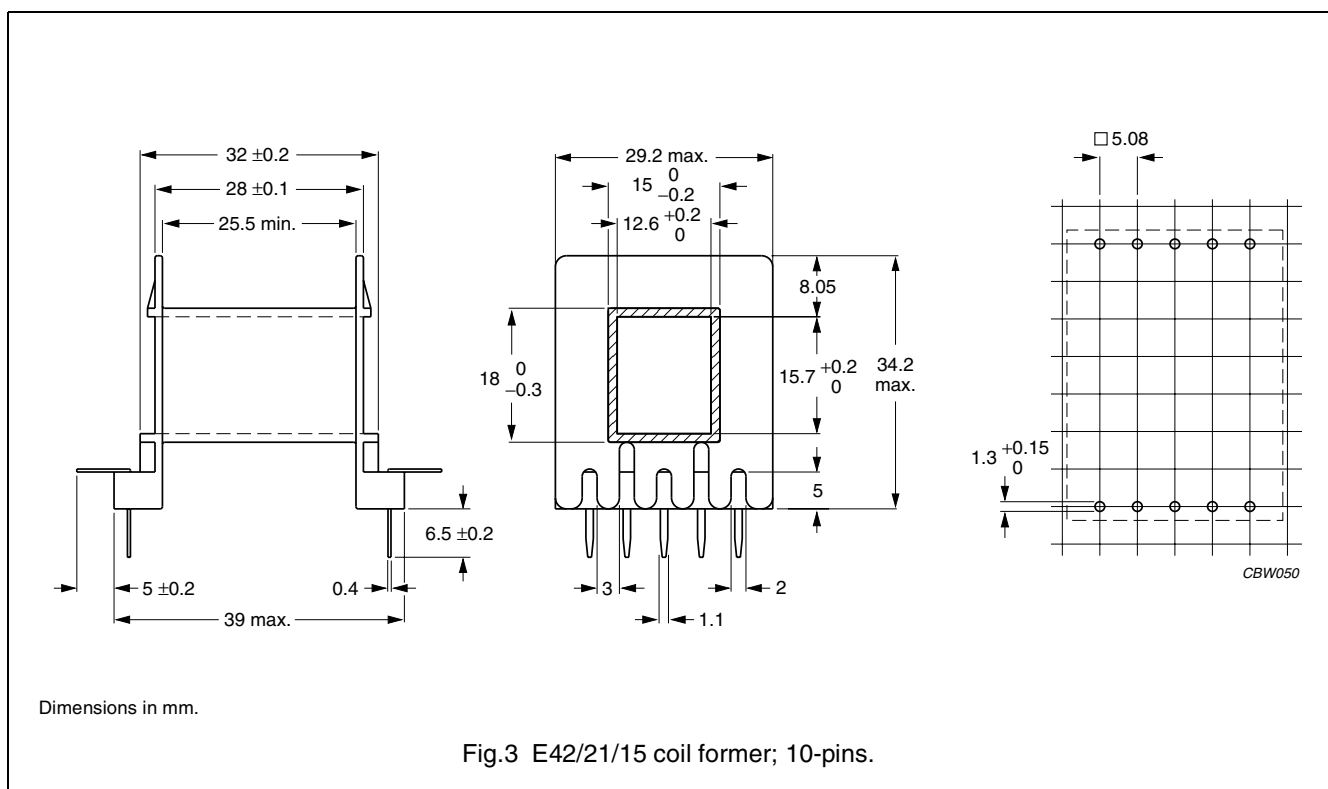


**Winding data and area product for E42/21/15 coil former without pins**

NUMBER OF SECTIONS	WINDING AREA (mm <sup>2</sup> )	MINIMUM WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	AREA PRODUCT Ae x Aw (mm <sup>4</sup> )	TYPE NUMBER
1	178	26.2	93	31700	CP-E42/21/15-1S

General data for 10-pins E42/21/15 coil former

PARAMETER	SPECIFICATION
Coil former material	polyamide (PA6.6), glass reinforced, flame retardant in accordance with "UL 94-HB"; UL file number E41613(M)
Pin material	copper-tin alloy (CuSn), tin (Sn) plated
Maximum operating temperature	130 °C, "IEC 60085", class E
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

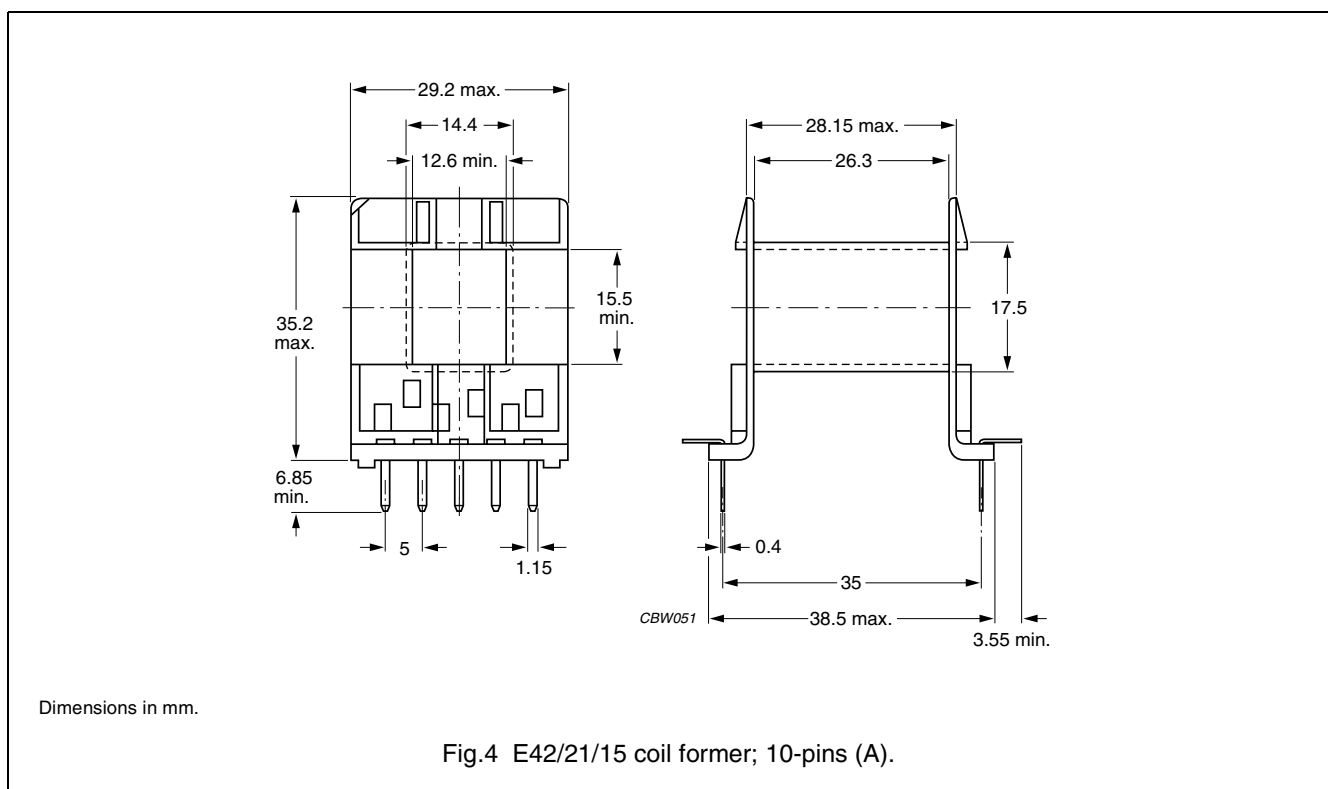


Winding data and area product for 10-pins E42/21/15 coil former

NUMBER OF SECTIONS	WINDING AREA (mm <sup>2</sup> )	MINIMUM WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	AREA PRODUCT Ae x Aw (mm <sup>4</sup> )	TYPE NUMBER
1	178	25.5	93	31700	CPH-E42/21/15-1S-10P

**General data for 10-pins E42/21/15 coil former (A)**

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 (Sn) plated
Maximum operating temperature	130 °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



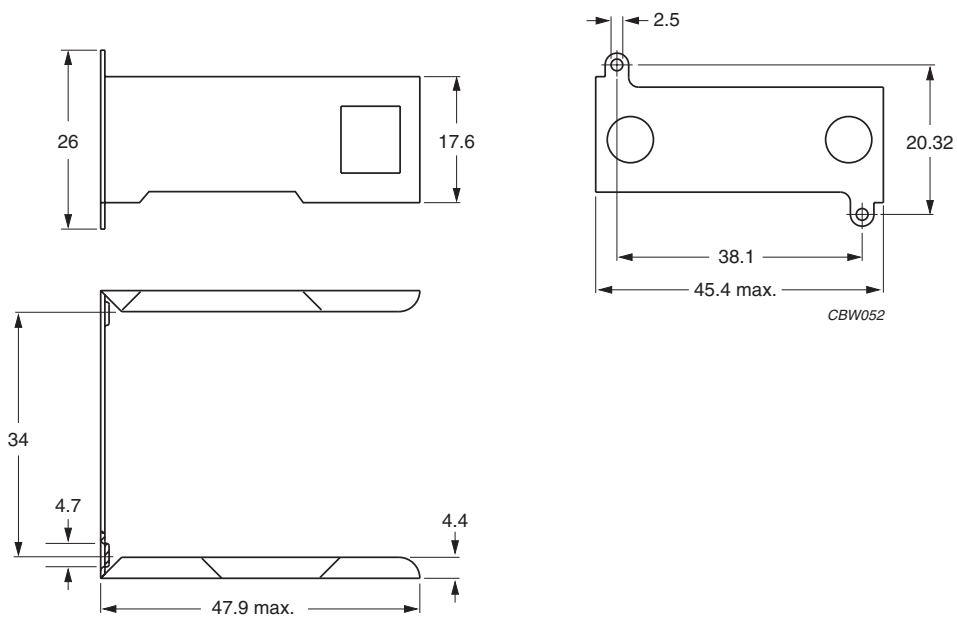
**Winding data and area product for 10-pins E42/21/15 coil former**

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	180	26.3	87	32000	CPH-E42/15-1S-10PD-A-Z

**MOUNTING PARTS**

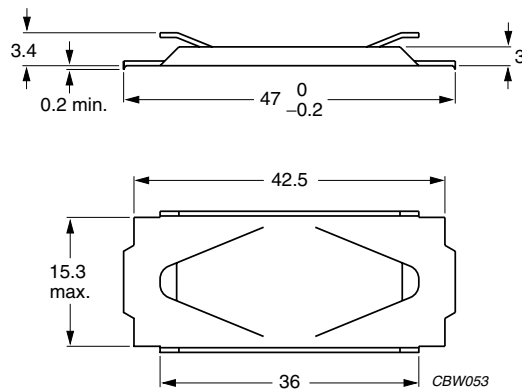
**General data for mounting parts**

ITEM	REMARKS	FIGURE	TYPE NUMBER
Clasp	steel, zinc (Zn) plated	5	CLA-E42/21/15
Spring	steel, zinc (Zn) plated	6	SPR-E42/21/15



Dimensions in mm.

Fig.5 E42/21/15 clasp.



Dimensions in mm.

Fig.6 E42/21/15 spring.




**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.