

# DATA SHEET

**E55/28/21**

**E cores and accessories**

Supersedes data of September 2004

2008 Sep 01

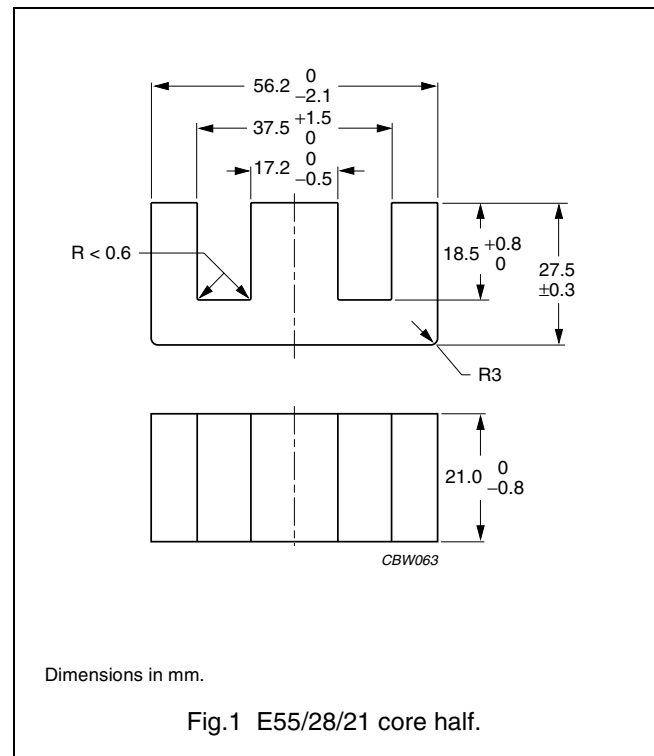
## E cores and accessories

E55/28/21

## CORE SETS

## Effective core parameters

| SYMBOL        | PARAMETER         | VALUE | UNIT             |
|---------------|-------------------|-------|------------------|
| $\Sigma(l/A)$ | core factor (C1)  | 0.350 | mm <sup>-1</sup> |
| $V_e$         | effective volume  | 44000 | mm <sup>3</sup>  |
| $l_e$         | effective length  | 124   | mm               |
| $A_e$         | effective area    | 353   | mm <sup>2</sup>  |
| $A_{min}$     | minimum area      | 345   | mm <sup>2</sup>  |
| m             | mass of core half | ≈ 108 | 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                   | $A_L$<br>(nH)        | $\mu_e$ | TOTAL AIR GAP<br>( $\mu\text{m}$ ) | TYPE NUMBER         |
|-------------------------|----------------------|---------|------------------------------------|---------------------|
| 3C81                    | $100 \pm 5\%^{(1)}$  | ≈ 28    | ≈ 8740                             | E55/28/21-3C81-E100 |
|                         | $160 \pm 5\%^{(1)}$  | ≈ 45    | ≈ 4560                             | E55/28/21-3C81-E160 |
|                         | $250 \pm 5\%^{(1)}$  | ≈ 70    | ≈ 2500                             | E55/28/21-3C81-E250 |
|                         | $315 \pm 5\%^{(1)}$  | ≈ 88    | ≈ 1840                             | E55/28/21-3C81-E315 |
|                         | $400 \pm 8\%^{(1)}$  | ≈ 112   | ≈ 1360                             | E55/28/21-3C81-E400 |
|                         | $630 \pm 10\%^{(1)}$ | ≈ 176   | ≈ 780                              | E55/28/21-3C81-E630 |
|                         | $8625 \pm 25\%$      | ≈ 2410  | ≈ 0                                | E55/28/21-3C81      |
| 3C90                    | $100 \pm 5\%^{(1)}$  | ≈ 28    | ≈ 8740                             | E55/28/21-3C90-E100 |
|                         | $160 \pm 5\%^{(1)}$  | ≈ 45    | ≈ 4560                             | E55/28/21-3C90-E160 |
|                         | $250 \pm 5\%^{(1)}$  | ≈ 70    | ≈ 2500                             | E55/28/21-3C90-E250 |
|                         | $315 \pm 5\%^{(1)}$  | ≈ 88    | ≈ 1840                             | E55/28/21-3C90-E315 |
|                         | $400 \pm 8\%^{(1)}$  | ≈ 112   | ≈ 1360                             | E55/28/21-3C90-E400 |
|                         | $630 \pm 10\%^{(1)}$ | ≈ 176   | ≈ 780                              | E55/28/21-3C90-E630 |
|                         | $6300 \pm 25\%$      | ≈ 1760  | ≈ 0                                | E55/28/21-3C90      |
| 3C91 <small>des</small> | $8625 \pm 25\%$      | ≈ 2410  | ≈ 0                                | E55/28/21-3C91      |
| 3C92 <small>des</small> | $4700 \pm 25\%$      | ≈ 1310  | ≈ 0                                | E55/28/21-3C92      |
| 3C94                    | $6400 \pm 25\%$      | ≈ 1790  | ≈ 0                                | E55/28/21-3C94      |

## E cores and accessories

E55/28/21

| GRADE                   | $A_L$<br>(nH)        | $\mu_e$        | TOTAL AIR GAP<br>( $\mu\text{m}$ ) | TYPE NUMBER        |
|-------------------------|----------------------|----------------|------------------------------------|--------------------|
| 3C95 <small>des</small> | $8625 \pm 25\%$      | $\approx 2410$ | $\approx 0$                        | E55/28/21-3C95     |
| 3F3                     | $100 \pm 5\%^{(1)}$  | $\approx 28$   | $\approx 8740$                     | E55/28/21-3F3-E100 |
|                         | $160 \pm 5\%^{(1)}$  | $\approx 45$   | $\approx 4560$                     | E55/28/21-3F3-E160 |
|                         | $250 \pm 5\%^{(1)}$  | $\approx 70$   | $\approx 2500$                     | E55/28/21-3F3-E250 |
|                         | $315 \pm 5\%^{(1)}$  | $\approx 88$   | $\approx 1840$                     | E55/28/21-3F3-E315 |
|                         | $400 \pm 8\%^{(1)}$  | $\approx 112$  | $\approx 1360$                     | E55/28/21-3F3-E400 |
|                         | $630 \pm 10\%^{(1)}$ | $\approx 176$  | $\approx 780$                      | E55/28/21-3F3-E630 |
|                         | $5700 \pm 25\%$      | $\approx 1590$ | $\approx 0$                        | E55/28/21-3F3      |

**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;<br>f = 25 kHz;<br>T = 100 °C | f = 25 kHz;<br>$\hat{B} = 200$ mT;<br>T = 100 °C | f = 100 kHz;<br>$\hat{B} = 100$ mT;<br>T = 100 °C | f = 100 kHz;<br>$\hat{B} = 200$ mT;<br>T = 25 °C | f = 100 kHz;<br>$\hat{B} = 200$ mT;<br>T = 100 °C | f = 400 kHz;<br>$\hat{B} = 50$ mT;<br>T = 100 °C |
| 3C81  | $\geq 320$                                | $\leq 9.0$                                       | –                                                 | –                                                | –                                                 | –                                                |
| 3C90  | $\geq 320$                                | $\leq 4.8$                                       | $\leq 5.9$                                        | –                                                | –                                                 | –                                                |
| 3C91  | $\geq 320$                                | –                                                | $\leq 3.5^{(1)}$                                  | –                                                | $\leq 20^{(1)}$                                   | –                                                |
| 3C92  | $\geq 370$                                | –                                                | $\leq 3.8$                                        | –                                                | $\leq 27$                                         | –                                                |
| 3C94  | $\geq 320$                                | –                                                | $\leq 3.8$                                        | –                                                | $\leq 27$                                         | –                                                |
| 3C95  | $\geq 320$                                | –                                                | –                                                 | $\leq 27.7$                                      | $\leq 26.4$                                       | –                                                |
| 3F3   | $\geq 320$                                | –                                                | $\leq 5.6$                                        | –                                                | –                                                 | $\leq 10$                                        |

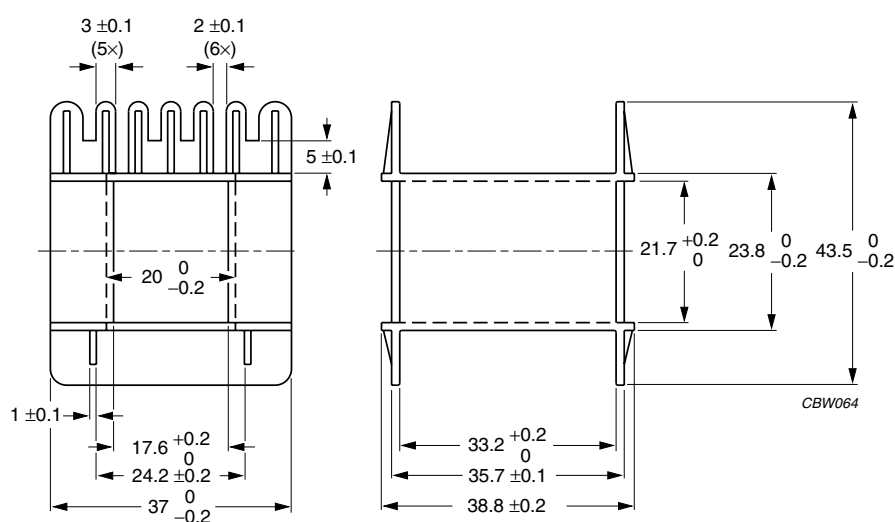
**Note**

1. Measured at 60 °C.

## COIL FORMERS

## General data for E55/28/21 coil former without pins

| PARAMETER                     | SPECIFICATION                                                                                                |
|-------------------------------|--------------------------------------------------------------------------------------------------------------|
| Coil former material          | polyamide (PA6.6), glass reinforced, flame retardant in accordance with "UL 94-HB"; UL file number E41613(M) |
| Maximum operating temperature | 130 °C, "IEC 60085", class B                                                                                 |



Dimensions in mm.

Fig.2 E55/28/21 coil former (E).

## Winding data and area product for E55/28/21 coil former without pins (E)

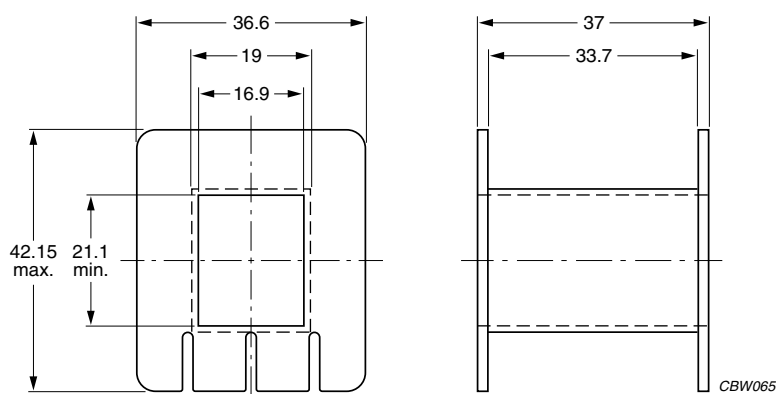
| NUMBER OF SECTIONS | MINIMUM WINDING AREA (mm <sup>2</sup> ) | MINIMUM WINDING WIDTH (mm) | AVERAGE LENGTH OF TURN (mm) | AREA PRODUCT Ae x Aw (mm <sup>4</sup> ) | TYPE NUMBER     |
|--------------------|-----------------------------------------|----------------------------|-----------------------------|-----------------------------------------|-----------------|
| 1                  | 250                                     | 33.2                       | 116                         | 88250                                   | CP-E55/28/21-1S |

## E cores and accessories

E55/28/21

## General data for E55/28/21 coil former without pins (A)

| 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                                                                                 |



Dimensions in mm.

Fig.3 E55/28/21 coil former (A).

## Winding data and area product for E55/28/21 coil former without pins (A)

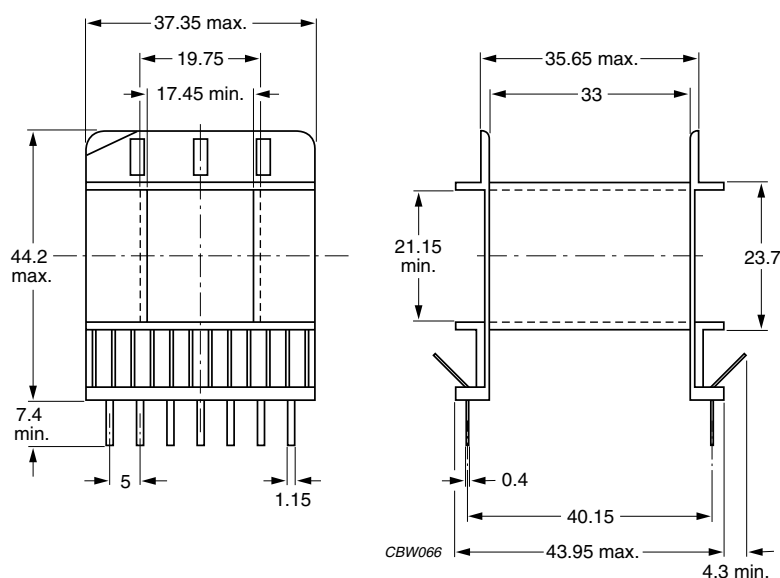
| NUMBER OF SECTIONS | MINIMUM WINDING AREA (mm <sup>2</sup> ) | NOMINAL WINDING WIDTH (mm) | AVERAGE LENGTH OF TURN (mm) | AREA PRODUCT Ae x Aw (mm <sup>4</sup> ) | TYPE NUMBER       |
|--------------------|-----------------------------------------|----------------------------|-----------------------------|-----------------------------------------|-------------------|
| 1                  | 277                                     | 33.7                       | 113                         | 97800                                   | CP-E55/28/21-1S-A |

## E cores and accessories

E55/28/21

## General data for 14-pins E55/28/21 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-zinc alloy (CuZn), tin (Sn) plated                                                                    |
| 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                                                     |



Dimensions in mm.

Fig.4 E55/28/21 coil former; 14-pins.

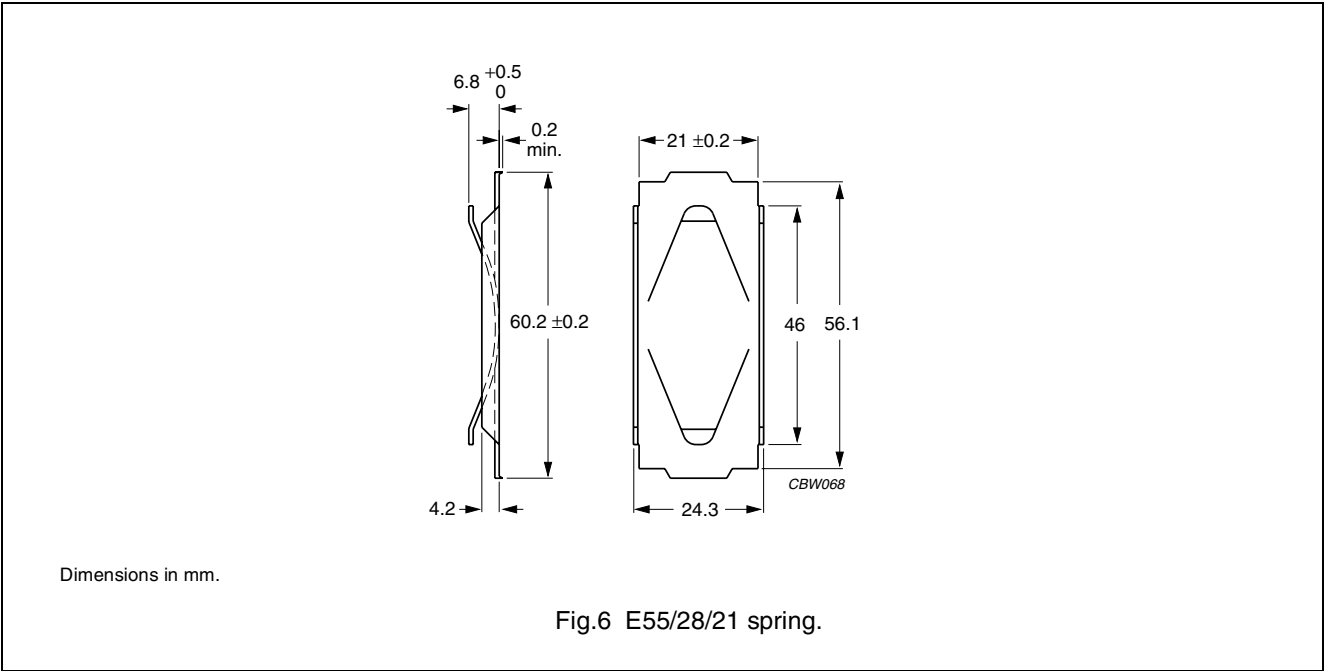
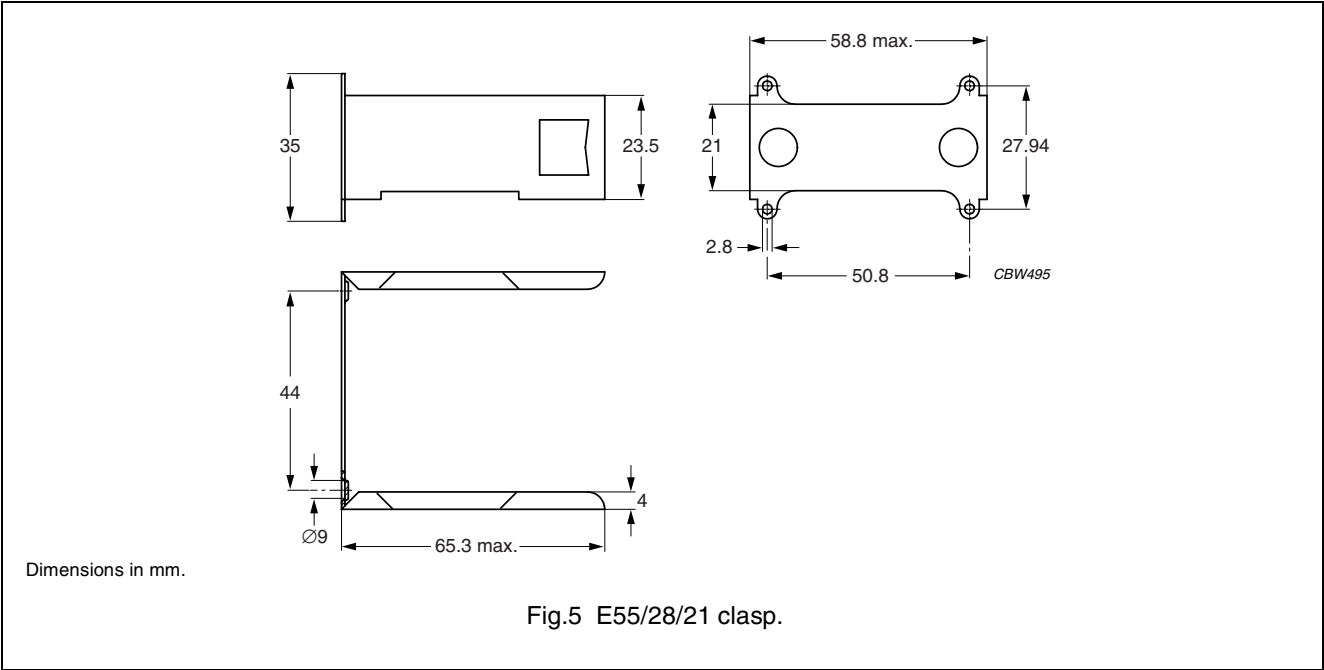
## Winding data and area product for 14-pins E55/28/21 coil former

| 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                  | 278                                     | 33                         | 119                         | 98100                                   | CPH-E55/28/21-1S-14P-Z |

MOUNTING PARTS

GENERAL DATA FOR MOUNTING PARTS

| ITEM   | REMARKS                 | FIGURE | TYPE NUMBER   |
|--------|-------------------------|--------|---------------|
| Clasp  | steel, zinc (Zn) plated | 5      | CLA-E55/28/21 |
| Spring | steel, zinc (Zn) plated | 6      | SPR-E55/28/21 |



## E cores and accessories

E55/28/21

## 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. |

## DISCLAIMER

**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.         |