

# DATA SHEET

**P9/5**

**P 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) | 1.24  | mm <sup>-1</sup> |
| $V_e$         | effective volume | 126   | mm <sup>3</sup>  |
| $l_e$         | effective length | 12.5  | mm               |
| $A_e$         | effective area   | 10.1  | mm <sup>2</sup>  |
| $A_{min}$     | minimum area     | 7.9   | mm <sup>2</sup>  |
| m             | mass of set      | ≈ 0.8 | g                |

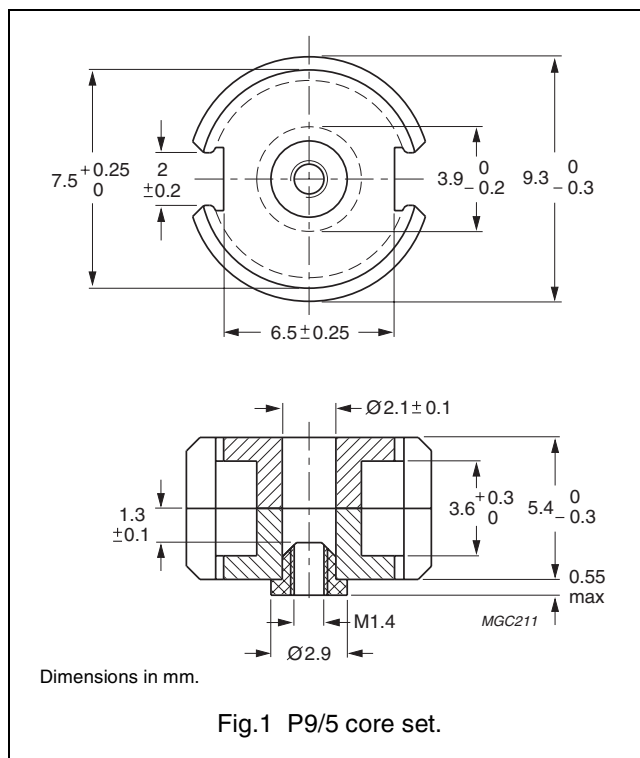


Fig.1 P9/5 core set.

**Core sets for filter applications**

Clamping force for  $A_L$  measurements, 25 ± 5 N.

| GRADE              | $A_L$ (nH) | $\mu_e$ | TOTAL AIR GAP ( $\mu\text{m}$ ) | TYPE NUMBER (WITH NUT) | TYPE NUMBER (WITHOUT NUT) |
|--------------------|------------|---------|---------------------------------|------------------------|---------------------------|
| 3D3 <sup>sup</sup> | 40 ± 3%    | ≈ 39    | ≈ 410                           | P9/5-3D3-E40/N         | P9/5-3D3-E40              |
|                    | 63 ± 3%    | ≈ 62    | ≈ 230                           | P9/5-3D3-A63/N         | P9/5-3D3-A63              |
|                    | 630 ± 25%  | ≈ 620   | ≈ 0                             | –                      | P9/5-3D3                  |
| 3H3 <sup>sup</sup> | 40 ± 3%    | ≈ 39    | ≈ 430                           | P9/5-3H3-E40/N         | P9/5-3H3-E40              |
|                    | 63 ± 3%    | ≈ 62    | ≈ 250                           | P9/5-3H3-A63/N         | P9/5-3H3-A63              |
|                    | 1100 ± 25% | ≈ 1080  | ≈ 0                             | –                      | P9/5-3H3                  |

**Core sets for general purpose transformers and power applications**

Clamping force for  $A_L$  measurements, 10 ± 5 N.

| GRADE               | $A_L$ (nH) | $\mu_e$ | AIR GAP ( $\mu\text{m}$ ) | TYPE NUMBER |
|---------------------|------------|---------|---------------------------|-------------|
| 3C81                | 1350 ± 25% | ≈ 1200  | ≈ 0                       | P9/5-3C81   |
| 3C91 <sup>des</sup> | 1350 ± 25% | ≈ 1200  | ≈ 0                       | P9/5-3C91   |
| 3F3                 | 1100 ± 25% | ≈ 1080  | ≈ 0                       | P9/5-3F3    |

**Core sets of high permeability grades**Clamping force for  $A_L$  measurements,  $25 \pm 5$  N.

| GRADE | $A_L$<br>(nH)   | $\mu_e$        | AIR GAP<br>( $\mu\text{m}$ ) | TYPE NUMBER |
|-------|-----------------|----------------|------------------------------|-------------|
| 3E27  | 2300 $\pm 25\%$ | $\approx 2020$ | $\approx 0$                  | P9/5-3E27   |

**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 = 100 °C | f = 400 kHz;<br>$\hat{B}$ = 50 mT;<br>T = 100 °C |
| 3C81  | $\geq 320$                                | $\leq 0.035$                                     | –   | –   | –  |
| 3C91  | $\geq 315$                                | –  | $\leq 0.008^{(1)}$                                | $\leq 0.06^{(1)}$                                 | –  |
| 3F3   | $\geq 315$                                | –  | $\leq 0.015$                                      | –   | $\leq 0.03$                                      |

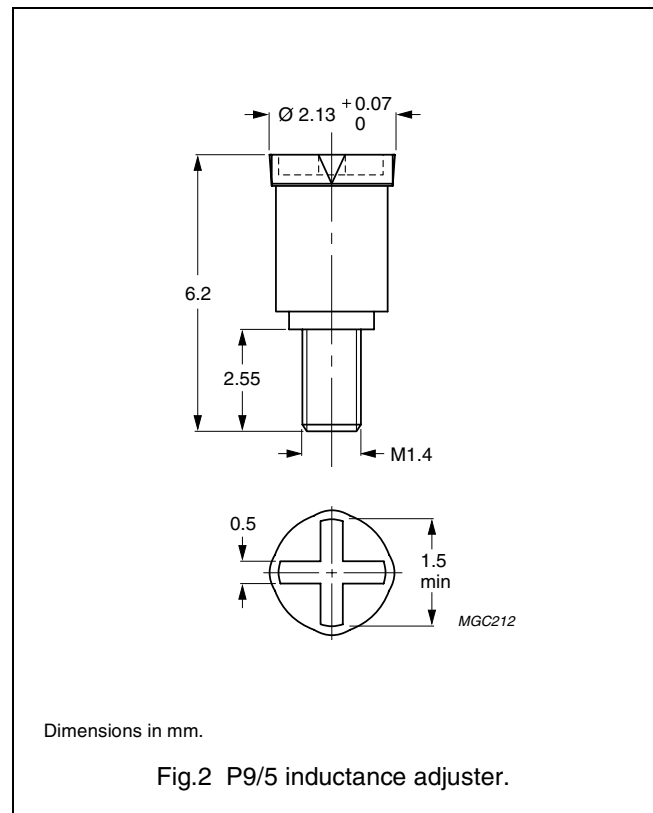
**Note**

1. Measured at 60 °C.

**INDUCTANCE ADJUSTERS**

**General data**

| ITEM                          | SPECIFICATION                              |
|-------------------------------|--|
| Material of head and thread   | polypropylene (PP), glass fibre reinforced |
| Maximum operating temperature | 125 °C                                     |



**Inductance adjuster selection chart <sup>sup</sup> (applies to all types)**

| GRADE | A <sub>L</sub> (nH) | TYPES FOR LOW ADJUSTMENT | ΔL/L <sup>(1)</sup> | TYPES FOR MEDIUM ADJUSTMENT | ΔL/L <sup>(1)</sup> | TYPES FOR HIGH ADJUSTMENT | ΔL/L <sup>(1)</sup> |
|-------|---------------------|--------------------------|---------------------|-----------------------------|---------------------|---------------------------|---------------------|
| 3D3   | 40                  | –                        | –                   | ADJ-P9/P11-YELLOW           | 11                  | –                         | –                   |
|       | 63                  | –                        | –                   | –                           | 18                  | ADJ-P9/P11-BROWN          | 31                  |

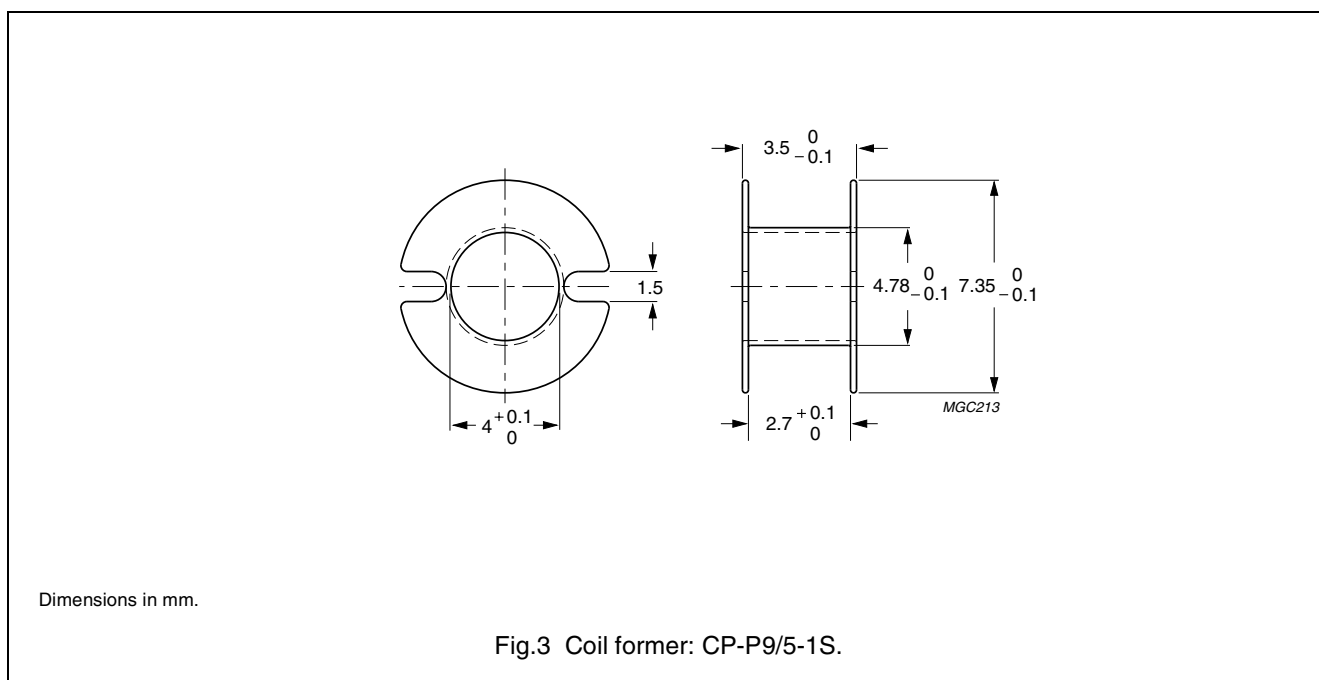
**Note**

1. Maximum adjustment range.

**COIL FORMERS**

**General data for coil former CP-P9/5-1S**

| 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  |



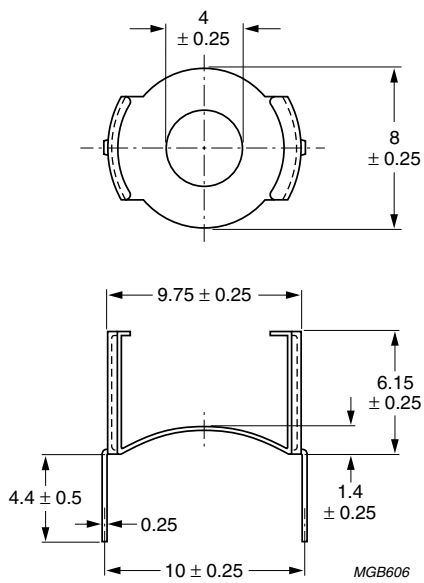
**Winding data and area product for coil former CP-P9/5-1S**

| 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                  | 3.1                             | 2.5                        | 18.9                        | 31.3                                    | CP-P9/5-1S  |

**MOUNTING PARTS**

**General data**

| ITEM  | REMARKS                  | FIGURE | TYPE NUMBER |
|-------|--------------------------|--------|-------------|
| Clamp | spring steel, tin plated | 4      | CLM/TP-P9/5 |



Dimensions in mm.

Fig.4 Clamp: CLM/TP-P9/5.




**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.         |