

# DATA SHEET

**P11/7**

**P cores and accessories**

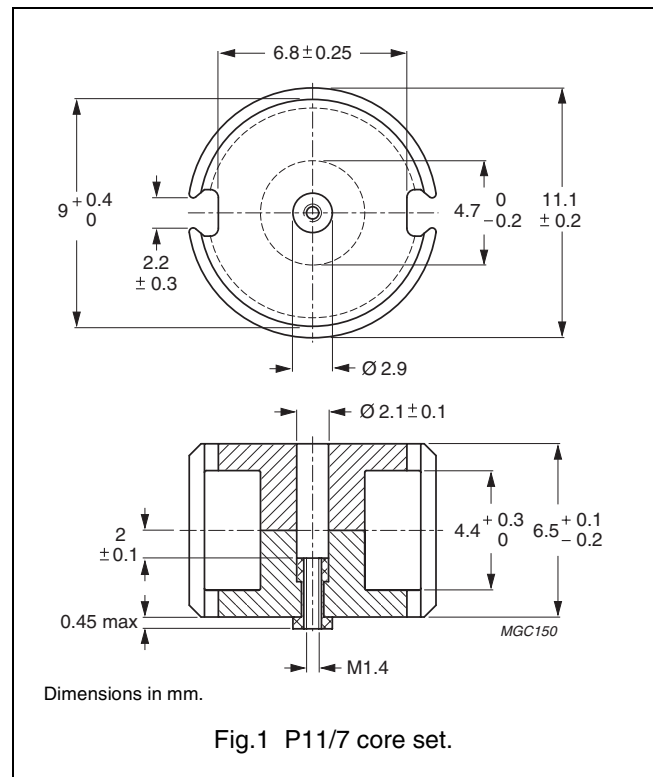
Supersedes data of September 2004

2008 Sep 01

**CORE SETS**

**Effective core parameters**

| SYMBOL        | PARAMETER        | VALUE | UNIT             |
|---------------|------------------|-------|------------------|
| $\Sigma(l/A)$ | core factor (C1) | 0.956 | mm <sup>-1</sup> |
| $V_e$         | effective volume | 251   | mm <sup>3</sup>  |
| $l_e$         | effective length | 15.5  | mm               |
| $A_e$         | effective area   | 16.2  | mm <sup>2</sup>  |
| $A_{min}$     | minimum area     | 13.2  | mm <sup>2</sup>  |
| m             | mass of set      | ≈ 1.8 | g                |



**Core sets for filter applications**

Clamping force for  $A_L$  measurements, 35 ± 10 N.

| GRADE              | $A_L$ (nH) | $\mu_e$ | TOTAL AIR GAP ( $\mu$ m) | TYPE NUMBER (WITH NUT) | TYPE NUMBER (WITHOUT NUT) |
|--------------------|------------|---------|--------------------------|------------------------|---------------------------|
| 3D3 <sup>sup</sup> | 16 ± 3%    | ≈ 12    | ≈ 2210                   | P11/7-3D3-E16/N        | P11/7-3D3-E16             |
|                    | 25 ± 3%    | ≈ 19    | ≈ 1280                   | P11/7-3D3-E25/N        | P11/7-3D3-E25             |
|                    | 40 ± 3%    | ≈ 31    | ≈ 710                    | P11/7-3D3-E40/N        | P11/7-3D3-E40             |
|                    | 63 ± 3%    | ≈ 48    | ≈ 400                    | P11/7-3D3-E63/N        | P11/7-3D3-E63             |
|                    | 100 ± 3%   | ≈ 76    | ≈ 220                    | P11/7-3D3-A100/N       | P11/7-3D3-A100            |
|                    | 800 ± 25%  | ≈ 610   | ≈ 0                      | —                      | P11/7-3D3                 |
| 3H3 <sup>sup</sup> | 160 ± 3%   | ≈ 122   | ≈ 140                    | P11/7-3H3-A160/N       | P11/7-3H3-A160            |
|                    | 250 ± 3%   | ≈ 190   | ≈ 80                     | P11/7-3H3-A250/N       | P11/7-3H3-A250            |
|                    | 1650 ± 25% | ≈ 1260  | ≈ 0                      | —                      | P11/7-3H3                 |

## P cores and accessories

P11/7

**Core sets for general purpose transformers and power applications**Clamping force for  $A_L$  measurements,  $35 \pm 10$  N.

| GRADE                   | $A_L$<br>(nH)   | $\mu_e$        | AIR GAP<br>( $\mu\text{m}$ ) | TYPE NUMBER     |
|-------------------------|-----------------|----------------|------------------------------|-----------------|
| 3C81                    | 100 $\pm 3\%$   | $\approx 76$   | $\approx 240$                | P11/7-3C81-A100 |
|                         | 160 $\pm 3\%$   | $\approx 122$  | $\approx 140$                | P11/7-3C81-A160 |
|                         | 250 $\pm 3\%$   | $\approx 190$  | $\approx 85$                 | P11/7-3C81-A250 |
|                         | 2050 $\pm 25\%$ | $\approx 1560$ | $\approx 0$                  | P11/7-3C81      |
| 3C91 <small>des</small> | 2050 $\pm 25\%$ | $\approx 1560$ | $\approx 0$                  | P11/7-3C91      |
| 3F3                     | 100 $\pm 3\%$   | $\approx 76$   | $\approx 240$                | P11/7-3F3-A100  |
|                         | 160 $\pm 3\%$   | $\approx 122$  | $\approx 140$                | P11/7-3F3-A160  |
|                         | 250 $\pm 5\%$   | $\approx 190$  | $\approx 80$                 | P11/7-3F3-A250  |
|                         | 1650 $\pm 25\%$ | $\approx 1260$ | $\approx 0$                  | P11/7-3F3       |

**Core sets of high permeability grades**Clamping force for  $A_L$  measurements,  $35 \pm 10$  N.

| GRADE | $A_L$<br>(nH)   | $\mu_e$        | AIR GAP<br>( $\mu\text{m}$ ) | TYPE NUMBER |
|-------|-----------------|----------------|------------------------------|-------------|
| 3E27  | 3400 $\pm 25\%$ | $\approx 2600$ | $\approx 0$                  | P11/7-3E27  |

**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>B = 200 mT;<br>T = 100 °C | f = 100 kHz;<br>B = 100 mT;<br>T = 100 °C | f = 100 kHz;<br>B = 200 mT;<br>T = 100 °C | f = 400 kHz;<br>B = 50 mT;<br>T = 100 °C |
| 3C81  | $\geq 320$                                | $\leq 0.05$                              | –   | –   | –  |
| 3C91  | $\geq 315$                                | –  | $\leq 0.015^{(1)}$                        | $\leq 0.12^{(1)}$                         | –  |
| 3F3   | $\geq 315$                                | –  | $\leq 0.03$                               | –   | $\leq 0.05$                              |

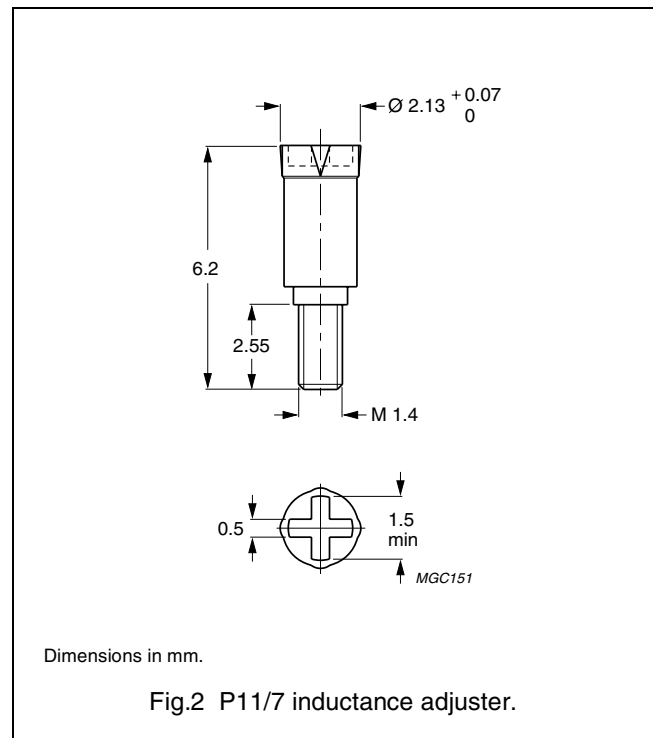
**Note**

1. Measured at 60 °C.

**INDUCTANCE ADJUSTERS**

**General data**

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



**Inductance adjuster selection chart <sup>sup up</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> |
|-------|---------------------|--------------------------|---------------------|-----------------------------|---------------------|---------------------------|---------------------|
| 3H3   | 100                 | –                        | –                   | ADJ-P9/P11-YELLOW           | 13                  | ADJ-P9/P11-BROWN          | 24                  |
|       | 160                 | ADJ-P9/P11-YELLOW        | 8                   | ADJ-P9/P11-BROWN            | 15                  | ADJ-P9/P11-GREY           | 22                  |
|       | 250                 | ADJ-P9/P11-BROWN         | 9                   | ADJ-P9/P11-GREY             | 14                  | –                         | –                   |
| 3D3   | 16                  | –                        | –                   | ADJ-P9/P11-YELLOW           | 19                  | –                         | –                   |
|       | 25                  | –                        | –                   | –                           | –                   | ADJ-P9/P11-YELLOW         | 30                  |
|       | 40                  | –                        | –                   | –                           | –                   | ADJ-P9/P11-YELLOW         | 24                  |
|       | 63                  | –                        | –                   | ADJ-P9/P11-YELLOW           | 18                  | –                         | –                   |
|       | 100                 | –                        | –                   | ADJ-P9/P11-YELLOW           | 11                  | –                         | –                   |

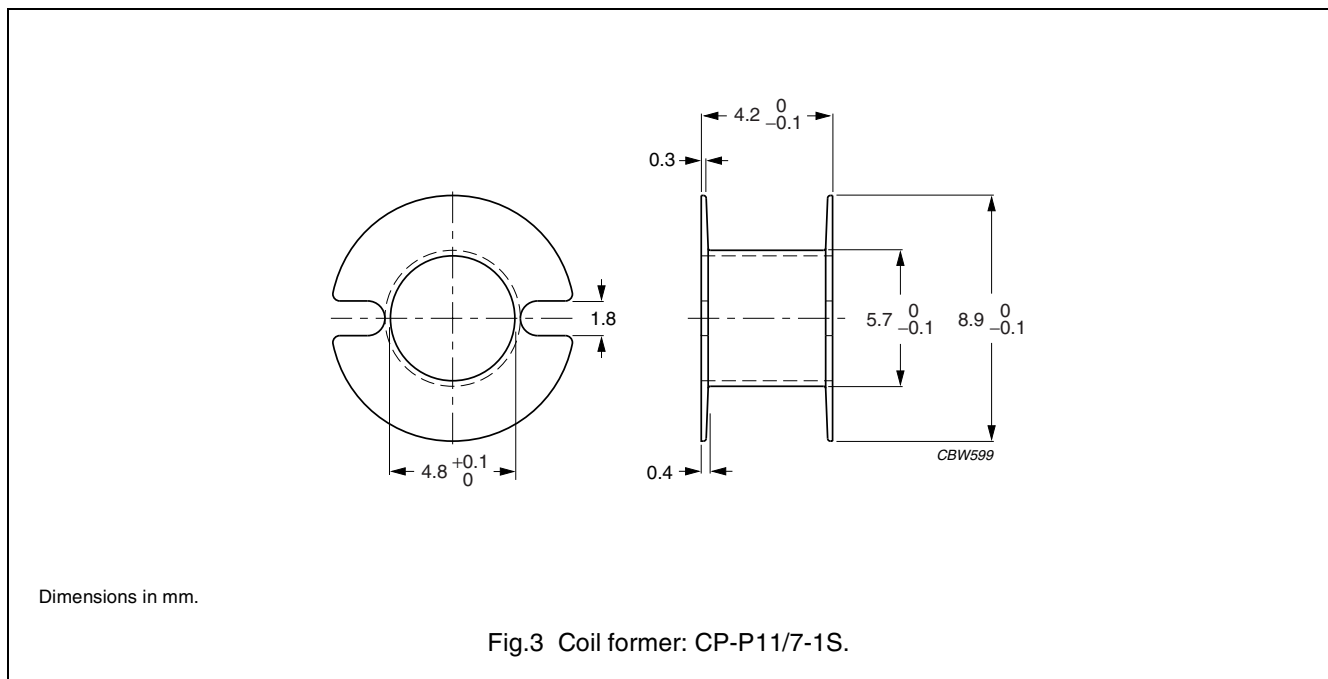
**Note**

1. Maximum adjustment range.

**COIL FORMERS**

**General data CP-P11/7-1S coil former**

| 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  |

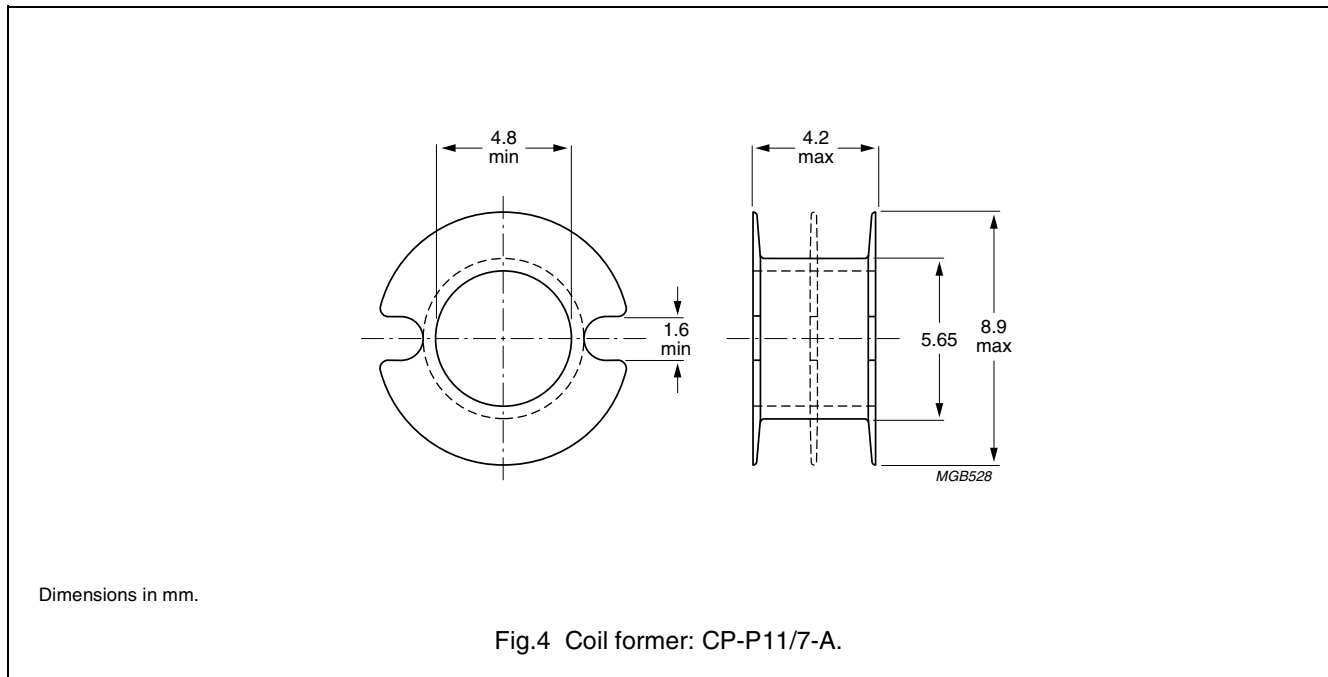


**Winding data and area product for CP-P11/7-1S coil former**

| 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                  | 4.8                             | 3.1                        | 22.6                        | 77.8                                    | CP-P11/7-1S |

**General data for CP-P11/7-A coil former**

| PARAMETER                     | SPECIFICATION   |
|-------------------------------|---|
| Coil former material          | acetal (POM), glass reinforced, flame retardant in accordance with "UL 94-HB"; UL file number E66288(R) |
| Maximum operating temperature | 105 °C  |



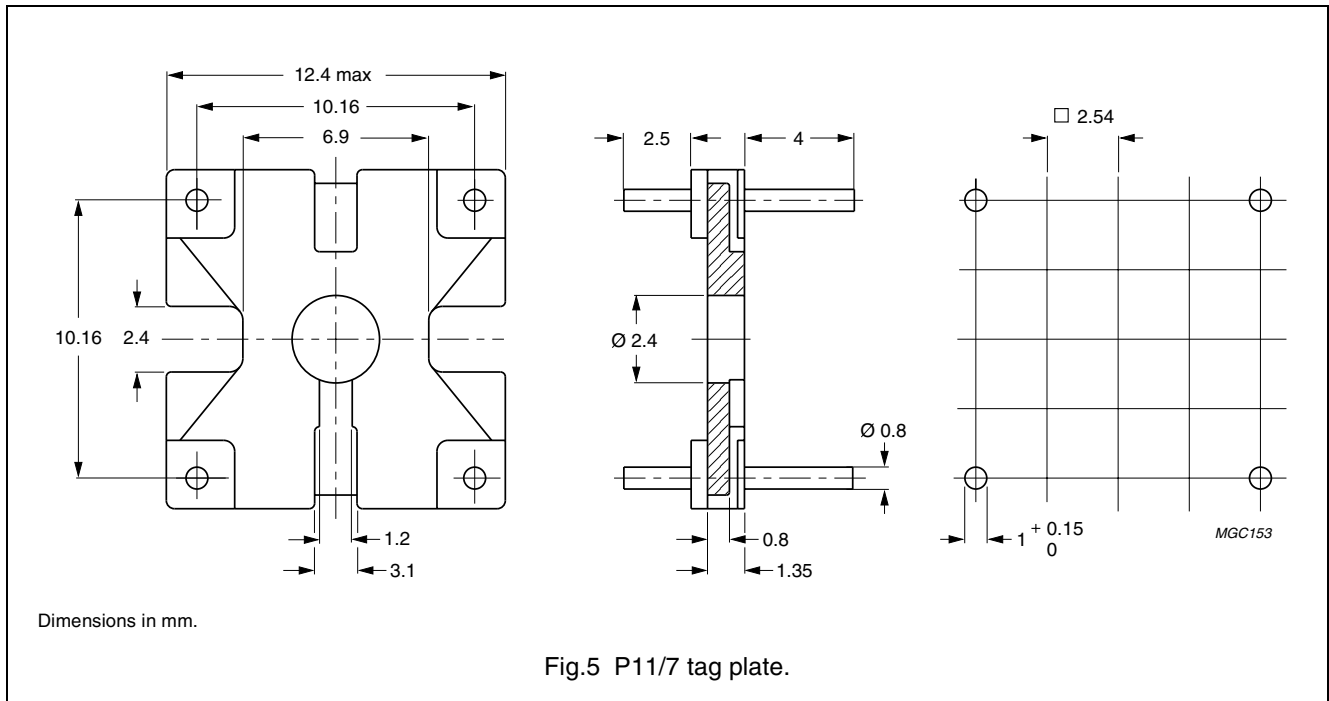
**Winding data and area product for CP-P11/7-A coil former**

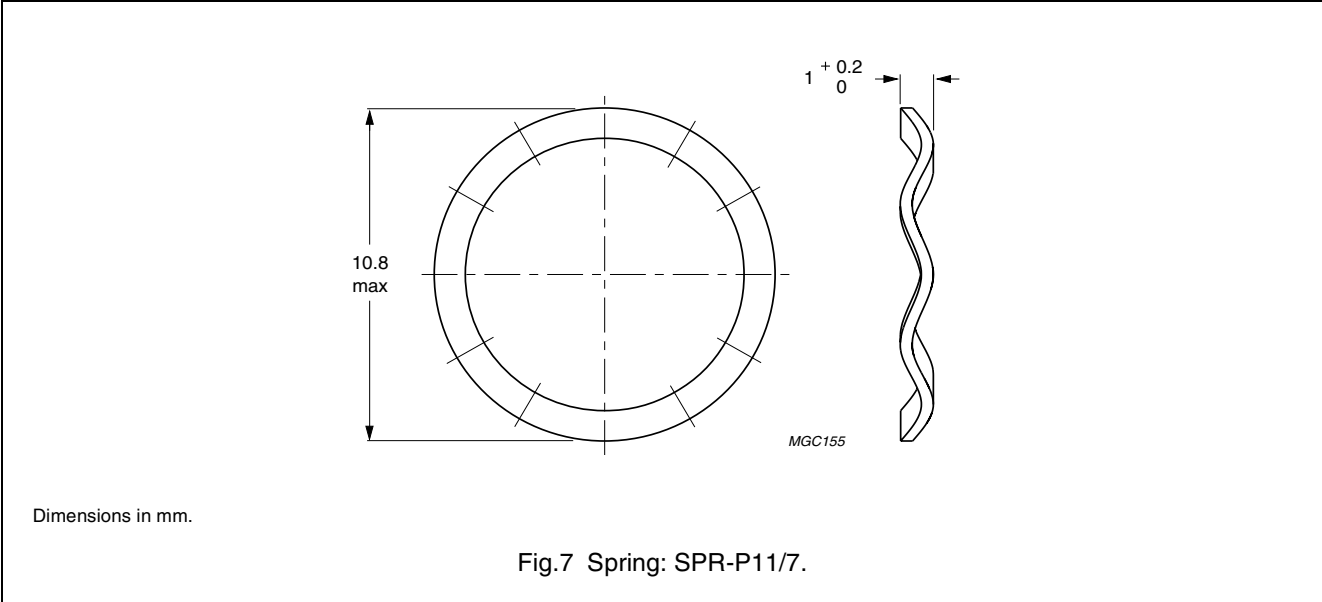
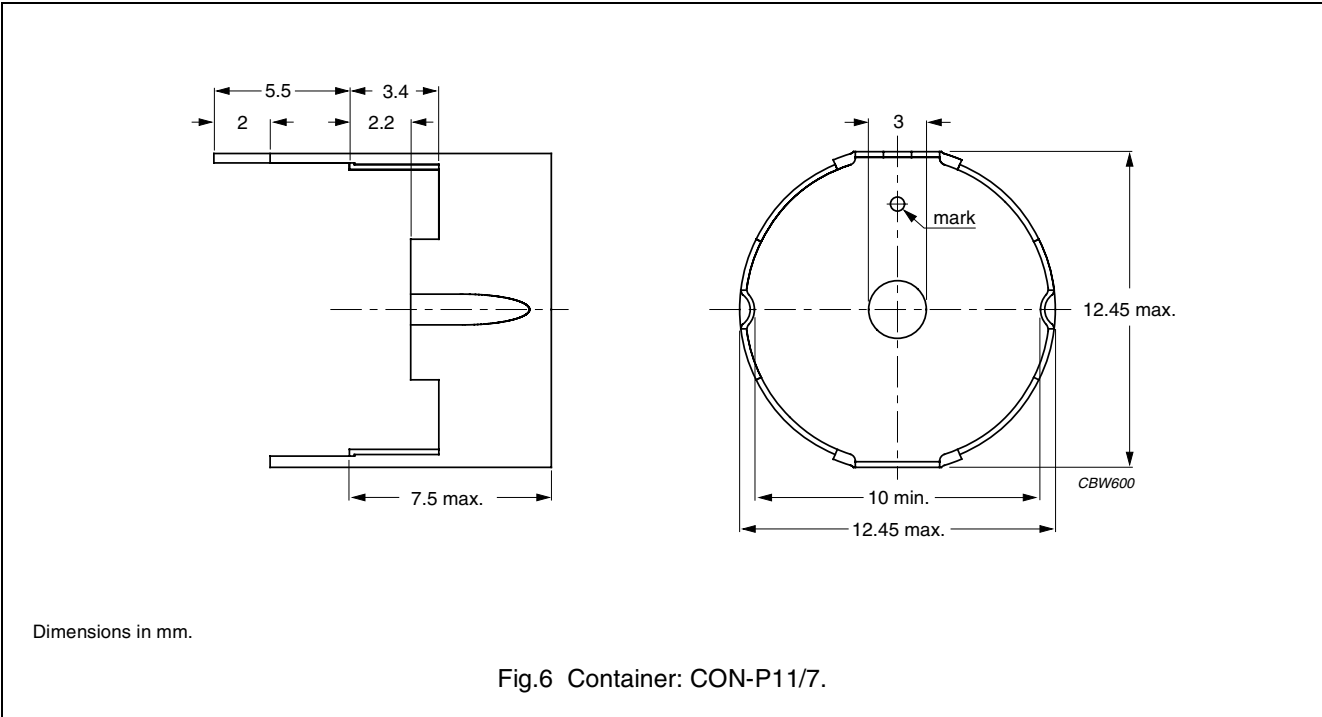
| NUMBER OF SECTIONS | MINIMUM WINDING AREA (mm <sup>2</sup> ) | NOMINAL WINDING WIDTH (mm) | AVERAGE LENGTH OF TURN (mm) | AREA PRODUCT Ae x Aw (mm <sup>4</sup> ) | TYPE NUMBER   |
|--------------------|---|----------------------------|-----------------------------|---|---------------|
| 1                  | 4.77                                    | 3.42                       | 22.7                        | 77.3                                    | CP-P11/7-1S-A |
| 2                  | 2 x 2.00                                | 2 x 1.52                   | 22.7                        | 2 x 32.4                                | CP-P11/7-2S-A |
| 3                  | 3 x 1.16                                | 3 x 0.91                   | 22.7                        | 3 x 18.8                                | CP-P11/7-3S-A |

**MOUNTING PARTS**

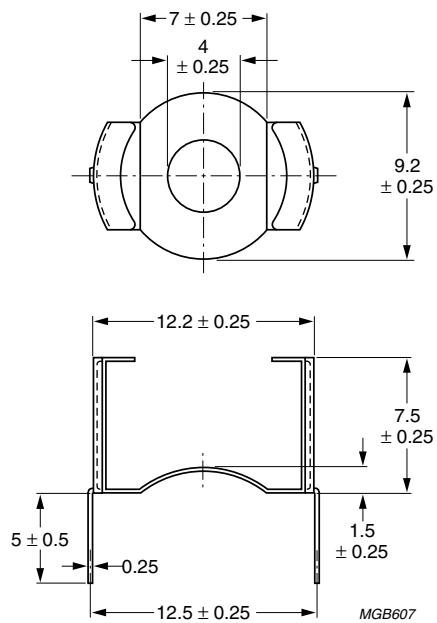
**General data**

| ITEM      | REMARKS  | FIGURE | TYPE NUMBER  |
|-----------|--|--------|--------------|
| Tag plate | material: phenolformaldehyde (PF), glass reinforced  | 5      | TGP-P11/7-C  |
|           | flame retardant: in accordance with "UL 94V-0";<br>file number E41429  |        |              |
|           | maximum operating temperature: 180 °C, "IEC 60085", class H  |        |              |
|           | pins : copper-tin alloy (CuSn), tin (Sn) plated  |        |              |
|           | resistance to soldering heat in accordance with "IEC 60068-2-20",<br>Part 2, Test Tb, method 1B: 350 °C, 3.5 s |        |              |
|           | solderability in accordance with "IEC 60068-2-20", Part 2, Test Ta,<br>method 1: 235 °C, 2 s                   |        |              |
| Container | copper-zinc alloy (CuZn), tin (Sn) plated  | 6      | CON-P11/7    |
|           | earth pins: presoldered  |        |              |
| Spring    | CrNi-steel   | 7      | SPR-P11/7    |
|           | spring force: ≈35 N when mounted   |        |              |
| Clamp     | spring steel, tin-plated   | 7      | CLM/TP-P11/7 |









Dimensions in mm.

Fig.7 Clamp: CLM/TP-P11/7.




**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.         |