

# DATA SHEET

## **TN13/7.5/5** Ferrite toroids

Supersedes data of September 2004

2008 Sep 01

Ferrite toroids

TN13/7.5/5

RING CORES (TOROIDS)

Effective core parameters

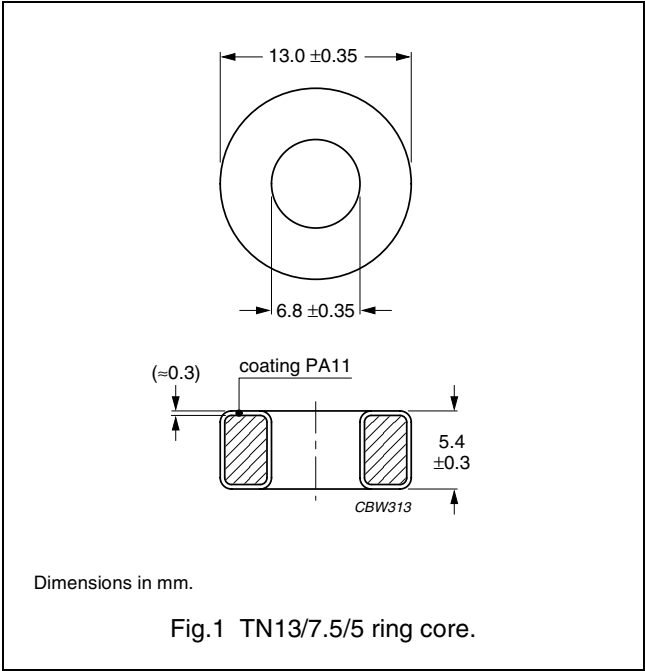
| SYMBOL        | PARAMETER        | VALUE         | UNIT             |
|---------------|------------------|---------------|------------------|
| $\Sigma(l/A)$ | core factor (C1) | 2.46          | $\text{mm}^{-1}$ |
| $V_e$         | effective volume | 368           | $\text{mm}^3$    |
| $l_e$         | effective length | 30.1          | mm               |
| $A_e$         | effective area   | 12.2          | $\text{mm}^2$    |
| m             | mass of core     | $\approx 1.8$ | g                |

Coating

The cores are coated with polyamide 11 (PA11), flame retardant in accordance with “UL 94V-2”; UL file number E 45228 (M). The colour is white.  
Maximum operating temperature is 160 °C.

Isolation voltage

DC isolation voltage: 1500 V.  
Contacts are applied on the edge of the ring core, which is also the critical point for the winding operation.



Ring core data

| GRADE              | $A_L$<br>(nH)   | $\mu_i$             | TYPE NUMBER     |
|--------------------|-----------------|---------------------|-----------------|
| 4C65               | $64 \pm 25\%$   | $\approx 125$       | TN13/7.5/5-4C65 |
| 4A11               | $358 \pm 25\%$  | $\approx 700^{(1)}$ | TN13/7.5/5-4A11 |
| 3F4                | $460 \pm 25\%$  | $\approx 900$       | TN13/7.5/5-3F4  |
| 4A15               | $610 \pm 25\%$  | $\approx 1200$      | TN13/7.5/5-4A15 |
| 3F3                | $900 \pm 25\%$  | $\approx 1800$      | TN13/7.5/5-3F3  |
| 3C90               | $1170 \pm 25\%$ | $\approx 2300$      | TN13/7.5/5-3C90 |
| 3C11               | $2200 \pm 25\%$ | $\approx 4300$      | TN13/7.5/5-3C11 |
| 3E25               | $2810 \pm 30\%$ | $\approx 5500$      | TN13/7.5/5-3E25 |
| 3R1 <sup>(2)</sup> | —               | —                   | TN13/7.5/5-3R1  |

1. Old permeability specification maintained.
2. Due to the rectangular BH-loop of 3R1, inductance values strongly depend on the magnetic state of the ring core and measuring conditions. Therefore no  $A_L$  value is specified. For the application in magnetic amplifiers  $A_L$  is not a critical parameter.

| WARNING                                                                                                                                              |
|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Do not use 3R1 cores close to their mechanical resonant frequency. For more information refer to “3R1” material specification in this data handbook. |

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## Properties of cores 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 = 400 kHz;<br>$\hat{B}$ = 50 mT;<br>T = 100 °C |
| 3C90  | ≥320                                      | ≤ 0.041                                          | ≤ 0.041                                           | –                                                |
| 3F3   | ≥320                                      | –                                                | ≤ 0.04                                            | ≤ 0.07                                           |

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## 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                                                                                                                                                                     |
|-----------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Prototype |  | 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. |
| Design-in |  | These products are recommended for new designs.                                                                                                                                |
| Preferred |                                                                                     | These products are recommended for use in current designs and are available via our sales channels.                                                                            |
| Support   |  | 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.         |