

# DATA SHEET

**E13/7/4**

**E cores and accessories**

Supersedes data of September 2004

2008 Sep 01

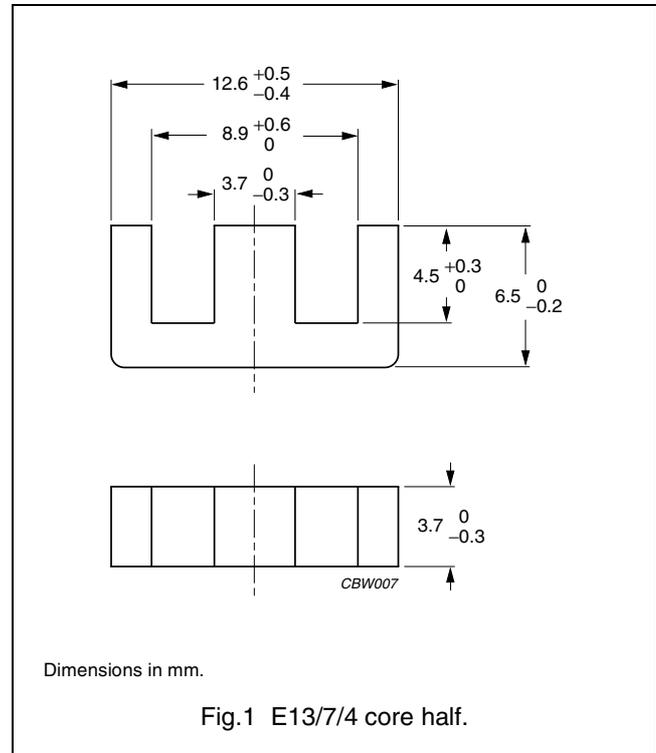


**FERROXCUBE**  
A YAGEO COMPANY

**CORE SETS**

**Effective core parameters**

SYMBOL	PARAMETER	VALUE	UNIT
$\Sigma(l/A)$	core factor (C1)	2.39	mm <sup>-1</sup>
$V_e$	effective volume	369	mm <sup>3</sup>
$l_e$	effective length	29.7	mm
$A_e$	effective area	12.4	mm <sup>2</sup>
$A_{min}$	minimum area	12.2	mm <sup>2</sup>
m	mass of core half	≈ 0.9	g



**Core halves**

$A_L$  measured in combination with a non-gapped core half, clamping force for  $A_L$  measurements, 15 ± 5 N.

GRADE	$A_L$ (nH)	$\mu_e$	AIR GAP ( $\mu$ m)	TYPE NUMBER
3C90	63 ± 5%	≈ 120	≈ 320	E13/7/4-3C90-A63
	100 ± 8%	≈ 190	≈ 175	E13/7/4-3C90-A100
	160 ± 8%	≈ 305	≈ 100	E13/7/4-3C90-A160
	250 ± 15%	≈ 480	≈ 55	E13/7/4-3C90-A250
	315 ± 15%	≈ 600	≈ 40	E13/7/4-3C90-A315
	800 ± 25%	≈ 1525	≈ 0	E13/7/4-3C90
3C92 <small>des</small>	630 ± 25%	≈ 1200	≈ 0	E13/7/4-3C92
3C94	800 ± 25%	≈ 1525	≈ 0	E13/7/4-3C94
3C96 <small>des</small>	700 ± 25%	≈ 1330	≈ 0	E13/7/4-3C96
3F3	63 ± 5%	≈ 120	≈ 320	E13/7/4-3F3-A63
	100 ± 8%	≈ 190	≈ 175	E13/7/4-3F3-A100
	160 ± 8%	≈ 305	≈ 100	E13/7/4-3F3-A160
	250 ± 15%	≈ 480	≈ 55	E13/7/4-3F3-A250
	315 ± 15%	≈ 600	≈ 40	E13/7/4-3F3-A315
	700 ± 25%	≈ 1330	≈ 0	E13/7/4-3F3
3F35 <small>des</small>	560 ± 25%	≈ 1070	≈ 0	E13/7/4-3F35

## E cores and accessories

E13/7/4  
(EF12.6)

## Core halves of high permeability grades

Clamping force for  $A_L$  measurements,  $15 \pm 5$  N.

GRADE	$A_L$ (nH)	$\mu_e$	AIR GAP ( $\mu\text{m}$ )	TYPE NUMBER
3E27	$1500 \pm 25\%$	$\approx 2800$	$\approx 0$	E13/7/4-3E27

## 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 = 100 °C	f = 400 kHz; $\hat{B} = 50$ mT; T = 100 °C
3C90	$\geq 320$	$\leq 0.05$	$\leq 0.05$	–	–
3C92	$\geq 370$	–	$\leq 0.04$	$\leq 0.2$	–
3C94	$\geq 320$	–	$\leq 0.04$	$\leq 0.2$	–
3C96	$\geq 340$	–	$\leq 0.03$	$\leq 0.16$	–
3F3	$\geq 320$	–	$\leq 0.05$	–	$\leq 0.07$
3F35	$\geq 300$	–	–	–	–

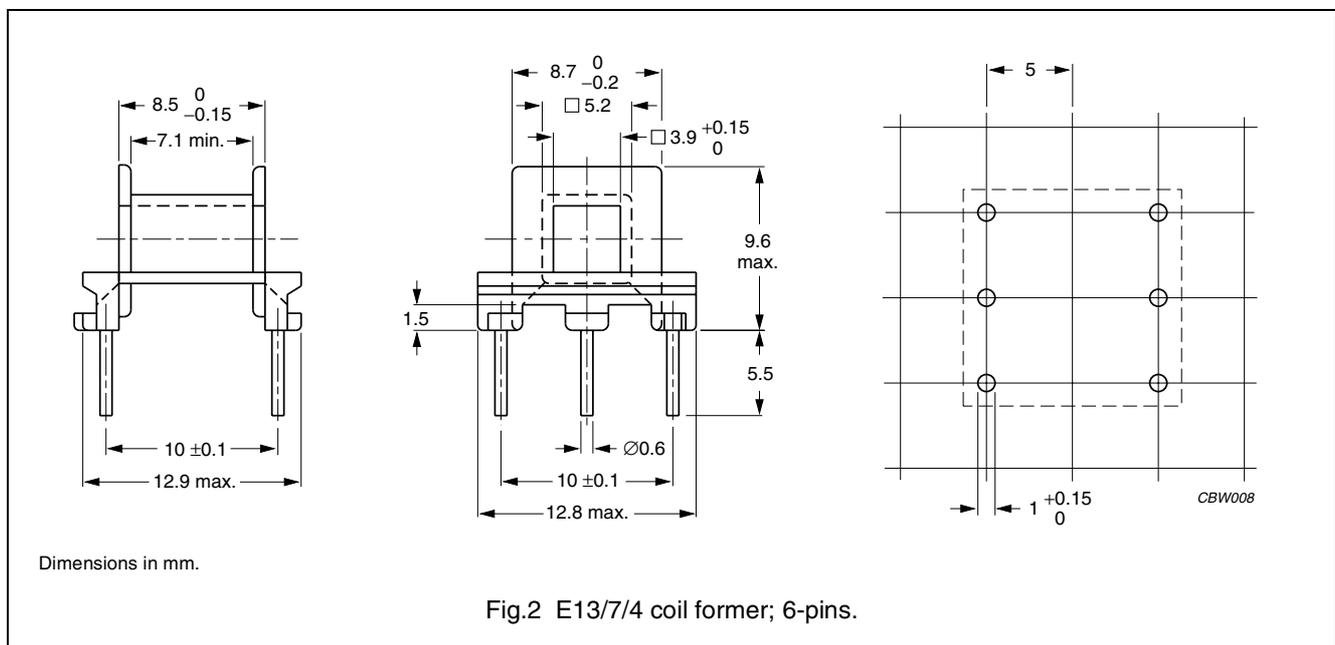
## Properties of core sets under power conditions (continued)

GRADE	B (mT) at	CORE LOSS (W) at			
	H = 250 A/m; f = 25 kHz; T = 100 °C	f = 500 kHz; $\hat{B} = 50$ mT; T = 100 °C	f = 500 kHz; $\hat{B} = 100$ mT; T = 100 °C	f = 1 MHz; $\hat{B} = 30$ mT; T = 100 °C	f = 3 MHz; $\hat{B} = 10$ mT; T = 100 °C
3C90	$\geq 320$	–	–	–	–
3C92	$\geq 370$	–	–	–	–
3C94	$\geq 320$	–	–	–	–
3C96	$\geq 340$	$\leq 0.14$	–	–	–
3F3	$\geq 315$	–	–	–	–
3F35	$\geq 300$	$\leq 0.05$	$\leq 0.39$	–	–

**COIL FORMER**

**General data for 6-pins E13/7/4 coil former**

PARAMETER	SPECIFICATION
Coil former material	polyamide (PA6.6), glass reinforced, flame retardant in accordance with "UL 94V-0"; UL file number E41871(M)
Pin material	copper-tin alloy (CuSn), tin (Sn) plated
Maximum operating temperature	130 °C, "IEC 60085", class B
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



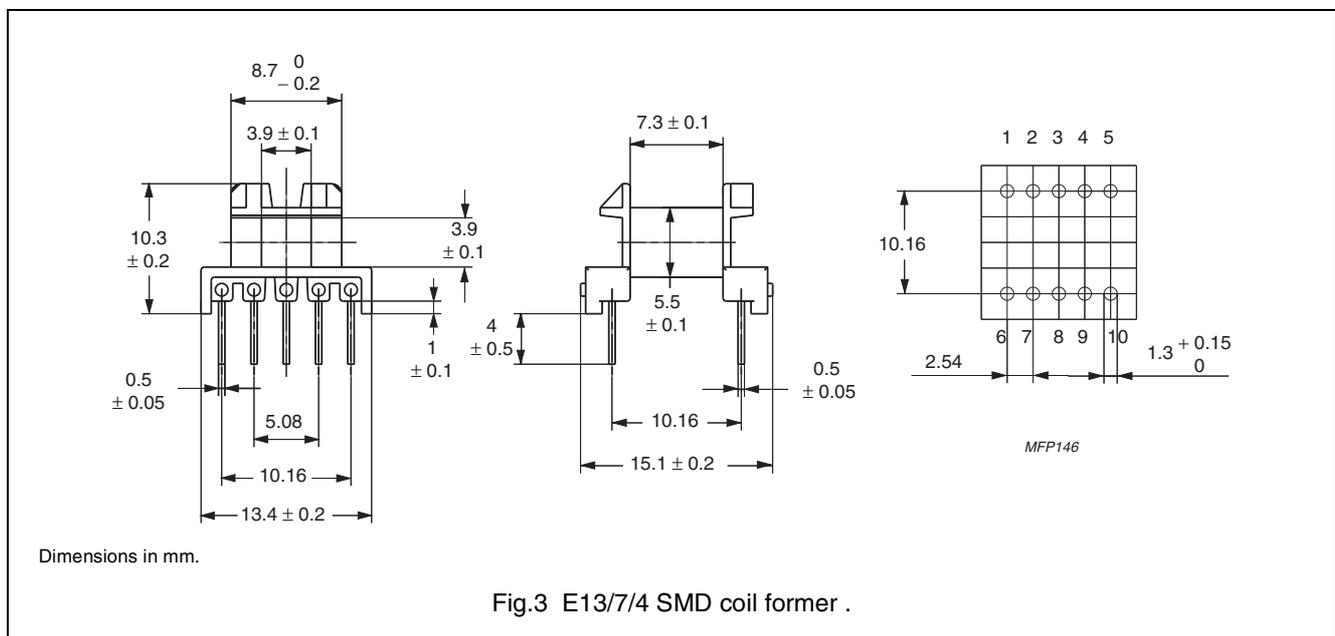
**Winding data and area product for E13/7/4 6-pins coil former**

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	11.6	7.1	24	144	CPH-E13/7/4-1S-6P

**COIL FORMER**

**General data for 10-pads E13/7/4 SMD coil former**

PARAMETER	SPECIFICATION
Coil former material	phenolformaldehyde (PF), glass reinforced, flame retardant in accordance with "UL 94V-0"; UL file number E59481
Pin material	copper-clad steel, tin (Sn) plated
Maximum operating temperature	180 °C, "IEC 60085", class H
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



**Winding data and area product for E13/7/4 SMD coil former**

NUMBER OF SECTIONS	NUMBER OF PINS	PIN POSITIONS USED	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	10	all	10.4	7.2	29.6	129	CSH-E13/7/4-1S-10P-C
1	6	1,2,4,5,7,9	10.4	7.2	29.6	129	CSH-E13/7/4-1S-6P-C
1	7	1,2,3,4,5,7,9	10.4	7.2	29.6	129	CSH-E13/7/4-1S-7P-C

## E cores and accessories

E13/7/4  
(EF12.6)

## 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.