

DATA SHEET

EP7

EP cores and accessories

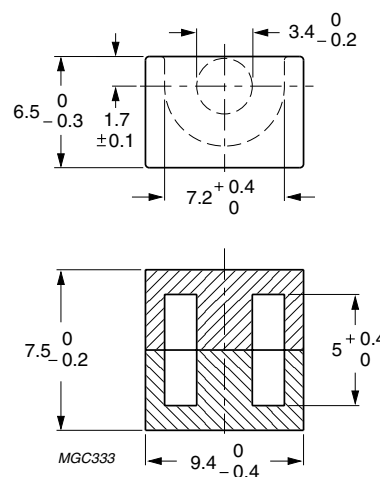
Supersedes data of September 2004

2008 Sep 01

CORE SETS

Effective core parameters

SYMBOL	PARAMETER	VALUE	UNIT
$\Sigma(l/A)$	core factor (C1)	1.45	mm ⁻¹
V_e	effective volume	165	mm ³
l_e	effective length	15.5	mm
A_e	effective area	10.7	mm ²
A_{min}	minimum area	8.55	mm ²
m	mass of core set	≈ 1.4	g



Dimensions in mm.

Fig.1 EP7 core set.

Core sets for filter applications

Clamping force for A_L measurements, 20 ± 10 N.

GRADE	A_L (nH)	μ_e	AIR GAP (μ m)	TYPE NUMBER
3B46 des	$1500 \pm 25\%$	≈ 1730	≈ 0	EP7-3B46

Core sets for general purpose transformers and power applications

Clamping force for A_L measurements, 20 ± 10 N.

GRADE	A_L (nH)	μ_e	TOTAL AIR GAP (μ m)	TYPE NUMBER
3C81	$25 \pm 3\%$	≈ 29	≈ 880	EP7-3C81-E25
	$40 \pm 3\%$	≈ 46	≈ 480	EP7-3C81-A40
	$63 \pm 3\%$	≈ 73	≈ 270	EP7-3C81-A63
	$100 \pm 3\%$	≈ 115	≈ 150	EP7-3C81-A100
	$160 \pm 5\%$	≈ 184	≈ 90	EP7-3C81-A160
	$1300 \pm 25\%$	≈ 1500	≈ 0	EP7-3C81
3C91 des	$1300 \pm 25\%$	≈ 1500	≈ 0	EP7-3C91
3C94	$25 \pm 3\%$	≈ 29	≈ 880	EP7-3C94-E25
	$40 \pm 3\%$	≈ 46	≈ 480	EP7-3C94-A40
	$63 \pm 3\%$	≈ 73	≈ 270	EP7-3C94-A63
	$100 \pm 3\%$	≈ 115	≈ 150	EP7-3C94-A100
	$160 \pm 5\%$	≈ 184	≈ 90	EP7-3C94-A160
	$1200 \pm 25\%$	≈ 1380	≈ 0	EP7-3C94

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GRADE	A_L (nH)	μ_e	TOTAL AIR GAP (μm)	TYPE NUMBER
3C96 des	$1\,120 \pm 25\%$	$\approx 1\,290$	≈ 0	EP7-3C96
3F3	$25 \pm 3\%$	≈ 29	≈ 880	EP7-3F3-E25
	$40 \pm 3\%$	≈ 46	≈ 480	EP7-3F3-A40
	$63 \pm 3\%$	≈ 73	≈ 270	EP7-3F3-A63
	$100 \pm 3\%$	≈ 115	≈ 150	EP7-3F3-A100
	$160 \pm 5\%$	≈ 184	≈ 90	EP7-3F3-A160
	$1\,000 \pm 25\%$	$\approx 1\,150$	≈ 0	EP7-3F3
3F35 des	$850 \pm 25\%$	≈ 980	≈ 0	EP7-3F35

Core sets of high permeability gradesClamping force for A_L measurements, 20 ± 10 N.

GRADE	A_L (nH)	μ_e	TYPE NUMBER
3E27	$3\,400 \pm 25\%$	$\approx 3\,920$	EP7-3E27
3E5	$5\,200 +40/-30\%$	$\approx 5\,990$	EP7-3E5
3E55 des	$5\,200 +40/-30\%$	$\approx 5\,990$	EP7-3E55
3E6	$5\,800 +40/-30\%$	$\approx 6\,680$	EP7-3E6

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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
3C81	≥320	≤ 0.04	–	–	–
3C91	≥320	–	≤ 0.11 ⁽¹⁾	≤ 0.06 ⁽¹⁾	–
3C94	≥320	–	≤ 0.014	≤ 0.08	–
3C96	≥340	–	≤ 0.011	≤ 0.06	≤ 0.025
3F35	≥320	–	–	–	≤ 0.015
3F3	≥315	–	≤ 0.02	–	≤ 0.035

Properties of core sets under power conditions (continued)

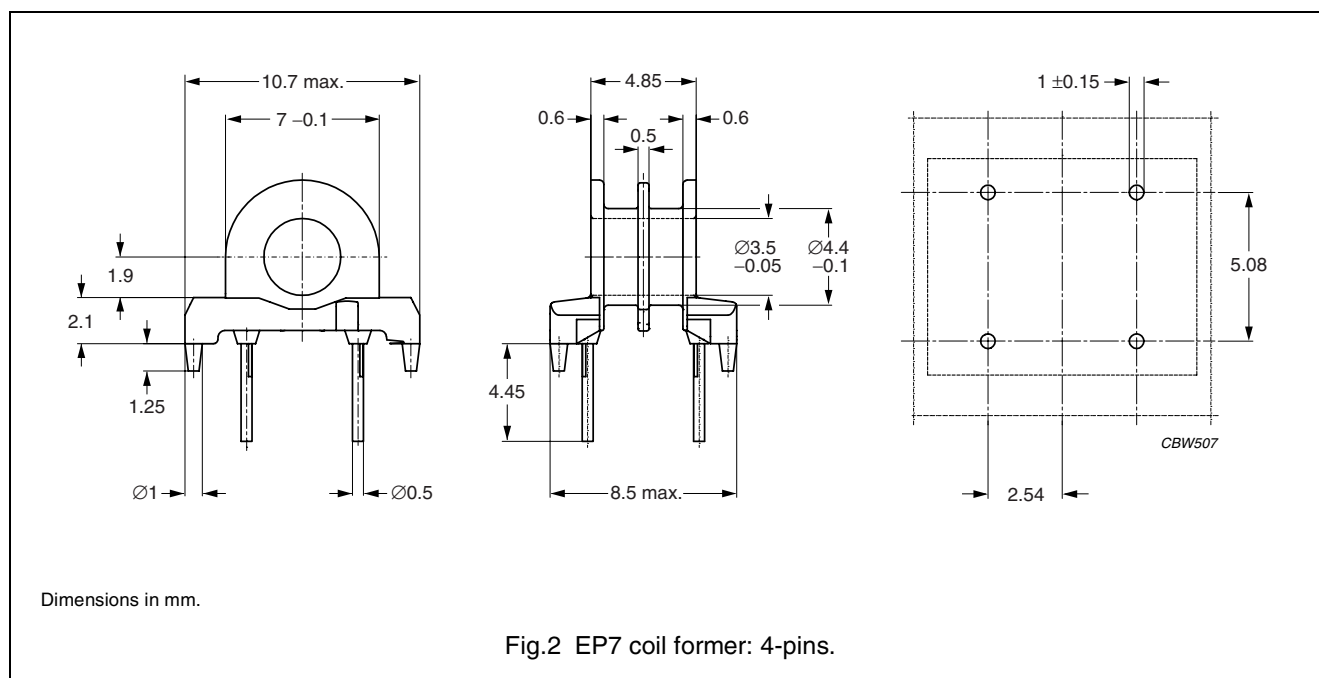
GRADE	B (mT) at	CORE LOSS (W) at			
	H = 250 A/m; f = 25 kHz; T = 100 °C	f = 500 kHz; $\hat{B}$ = 50 mT; T = 100 °C	f = 500 kHz; $\hat{B}$ = 100 mT; T = 100 °C	f = 1 MHz; $\hat{B}$ = 30 mT; T = 100 °C	f = 3 MHz; $\hat{B}$ = 10 mT; T = 100 °C
3C81	≥320	–	–	–	–
3C91	≥320	–	–	–	–
3C94	≥320	–	–	–	–
3C96	≥340	≤ 0.055	–	–	–
3F35	≥320	≤ 0.02	≤ 0.15	–	–
3F3	≥315	–	–	–	–

Note

1. Measured at 60 °C.

COIL FORMERS**General data**

PARAMETER	SPECIFICATION
Coil former material	phenolformaldehyde (PF), glass-reinforced, flame retardant in accordance with "UL 94V-0"; UL file number E41429(M)
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, 235 °C, 2 s

**Winding data and area product for 4-pins EP7 coil former**

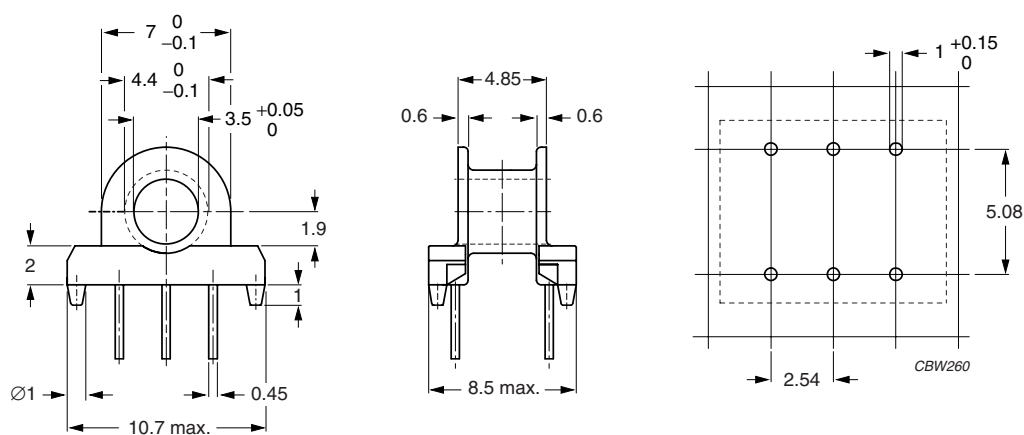
NUMBER OF SECTIONS	WINDING AREA (mm ²)	NOMINAL WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	AREA PRODUCT Ae x Aw (mm ⁴)	TYPE NUMBER
2	2 × 1.75	2 × 1.45	17.9	2 × 18.7	CSH-EP7-2S-4P-TA

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General data CSH-EP7-1S-6P-B

PARAMETER	SPECIFICATION
Coil former material	phenolformaldehyde (PF), glass-reinforced, flame retardant in accordance with "UL 94V-0"; UL file number E41429(M)
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, 235 °C, 2 s



Dimensions in mm.

Fig.3 EP7 coil former: 6-pins.

Winding data and area product for 4 and 6-pins EP7 coil former

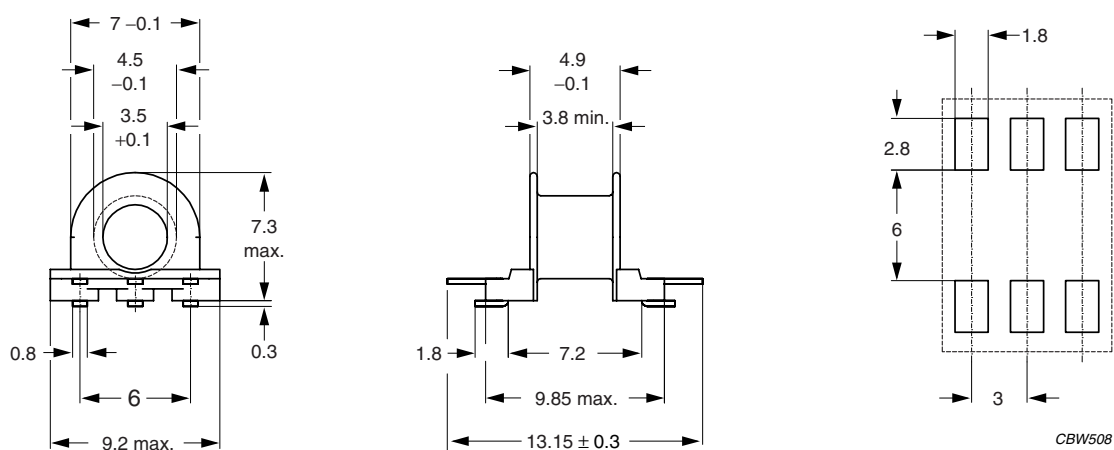
NUMBER OF SECTIONS	MINIMUM WINDING AREA (mm ²)	NOMINAL WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	AREA PRODUCT Ae x Aw (mm ⁴)	TYPE NUMBER
1	4.3	3.4	17.7	46.0	CSH-EP7-1S-6P-BZ
1	4.3	3.4	17.7	46.0	CSH-EP7-1S-4P-BZ

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General data for 6-pads EP7 SMD coil former

PARAMETER	SPECIFICATION
Coil former material	phenolformaldehyde (PF), glass reinforced, flame retardant in accordance with "UL 94V-0"; UL file number: E41429 (M)
Solder pad material	copper-clad steel , tin (Sn) plated
Maximum operating temperature	155 °C, "IEC 60085", class F
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 Coil former CSHS-EP7-1S-6P: 6-pads.

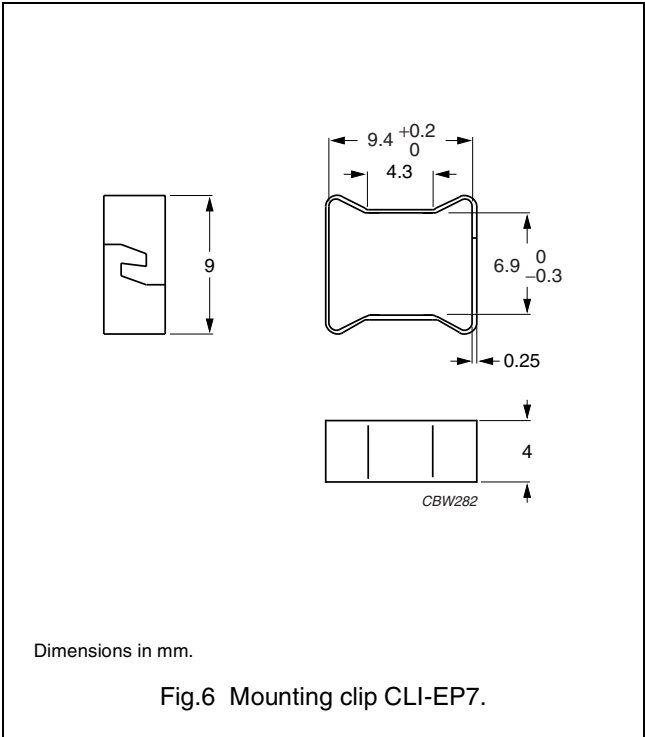
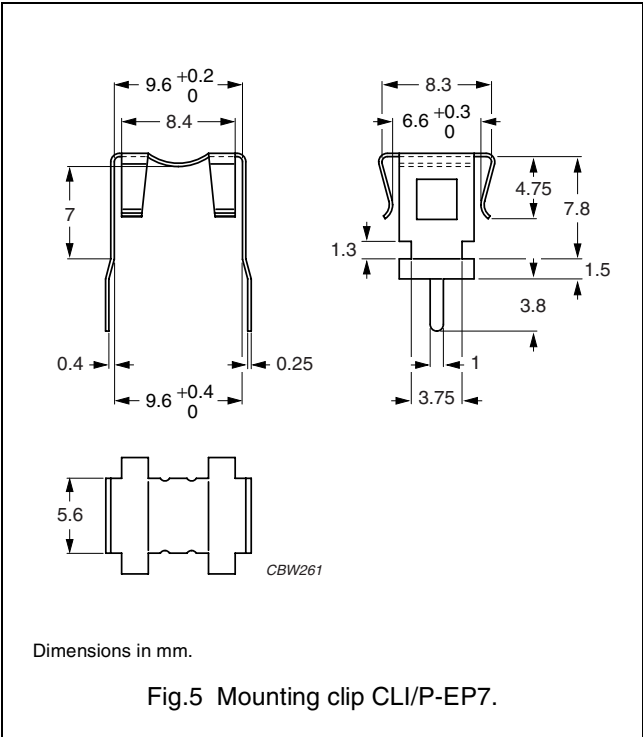
Winding data and area product for 6-pads EP7 SMD coil former

NUMBER OF SECTIONS	WINDING AREA (mm ²)	MINIMUM WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	AREA PRODUCT Ae x Aw (mm ⁴)	TYPE NUMBER
1	4.7	3.9	17.9	50.3	CSHS-EP7-1S-6P-Z
1	4.7	3.9	17.9	50.3	CSHS-EP7-1S-5P-Z

MOUNTING PARTS

General data

ITEM	REMARKS	FIGURE	TYPE NUMBER
Mounting clip	stainless steel (CrNi), tin (Sn) plated ; to be used in combination with CSH-EP7-1S-6P-BZ	5	CLI/P-EP7
Mounting clip	stainless steel (CrNi); clamping force ≈ 22 N	6	CLI-EP7



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

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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 not recommended for new designs and may not be available through all of our sales channels. Customers are advised to check for availability.