

DATA SHEET

EP10

EP cores and accessories

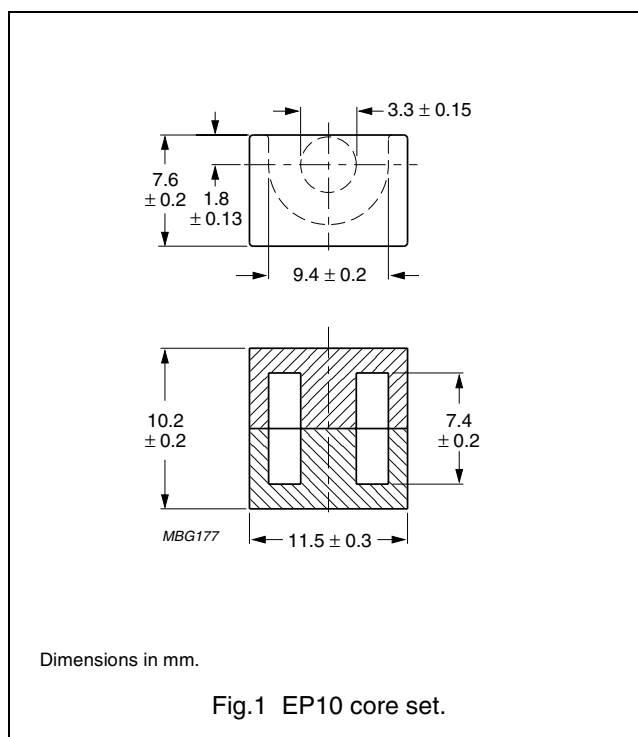
Supersedes data of September 2004

2008 Sep 01

CORE SETS

Effective core parameters

SYMBOL	PARAMETER	VALUE	UNIT
$\Sigma(l/A)$	core factor (C1)	1.70	mm ⁻¹
V_e	effective volume	215	mm ³
l_e	effective length	19.3	mm
A_e	effective area	11.3	mm ²
A_{min}	minimum area	8.55	mm ²
m	mass of core set	≈ 2.8	g



Core sets for filter applications

Clamping force for A_L measurements, 30 ± 10 N.

GRADE	A_L (nH)	μ_e	AIR GAP (μ m)	TYPE NUMBER
3B46 des	$1400 \pm 25\%$	≈ 1890	≈ 0	EP10-3B46

Core sets for general purpose transformers and power applications

Clamping force for A_L measurements, 30 ± 10 N.

GRADE	A_L (nH)	μ_e	TOTAL AIR GAP (μ m)	TYPE NUMBER
3C81	$25 \pm 3\%$	≈ 34	≈ 1010	EP10-3C81-E25
	$40 \pm 3\%$	≈ 54	≈ 530	EP10-3C81-A40
	$63 \pm 3\%$	≈ 86	≈ 290	EP10-3C81-A63
	$100 \pm 3\%$	≈ 136	≈ 160	EP10-3C81-A100
	$160 \pm 5\%$	≈ 217	≈ 90	EP10-3C81-A160
	$1200 \pm 25\%$	≈ 1630	≈ 0	EP10-3C81
3C91 des	$1200 \pm 25\%$	≈ 1630	≈ 0	EP10-3C91
3C94	$25 \pm 3\%$	≈ 34	≈ 1010	EP10-3C94-E25
	$40 \pm 3\%$	≈ 54	≈ 530	EP10-3C94-A40
	$63 \pm 3\%$	≈ 86	≈ 290	EP10-3C94-A63
	$100 \pm 3\%$	≈ 136	≈ 160	EP10-3C94-A100
	$160 \pm 5\%$	≈ 217	≈ 90	EP10-3C94-A160
	$1140 \pm 25\%$	≈ 1550	≈ 0	EP10-3C94

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GRADE	A_L (nH)	μ_e	TOTAL AIR GAP (μm)	TYPE NUMBER
3C96 des	$1000 \pm 25\%$	≈ 1350	≈ 0	EP10-3C96
3F3	$25 \pm 3\%$	≈ 34	≈ 1010	EP10-3F3-E25
	$40 \pm 3\%$	≈ 54	≈ 530	EP10-3F3-A40
	$63 \pm 3\%$	≈ 86	≈ 290	EP10-3F3-A63
	$100 \pm 3\%$	≈ 136	≈ 160	EP10-3F3-A100
	$160 \pm 5\%$	≈ 217	≈ 90	EP10-3F3-A160
	$1000 \pm 25\%$	≈ 1360	≈ 0	EP10-3F3
3F35 des	$800 \pm 25\%$	≈ 1090	≈ 0	EP10-3F35

Core sets of high permeability grades

Clamping force for A_L measurements, 30 ± 10 N.

GRADE	A_L (nH)	μ_e	AIR GAP (μm)	TYPE NUMBER
3E27	$3400 \pm 25\%$	≈ 4630	≈ 0	EP10-3E27
3E5	$4800 +40/-30\%$	≈ 6530	≈ 0	EP10-3E5
3E55 des	$4800 +40/-30\%$	≈ 6530	≈ 0	EP10-3E55
3E6	$5400 +40/-30\%$	≈ 7340	≈ 0	EP10-3E6

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	≥ 315	≤ 0.043	—	—	—
3C91	≥ 315	—	$\leq 0.014^{(1)}$	$\leq 0.08^{(1)}$	—
3C94	≥ 320	—	≤ 0.019	≤ 0.1	—
3C96	≥ 340	—	≤ 0.014	≤ 0.08	≤ 0.035
3F3	≥ 315	—	≤ 0.025	—	≤ 0.045
3F35	≥ 300	—	—	—	≤ 0.02

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	≥ 315	—	—	—	—
3C91	≥ 315	—	—	—	—
3C94	≥ 320	—	—	—	—

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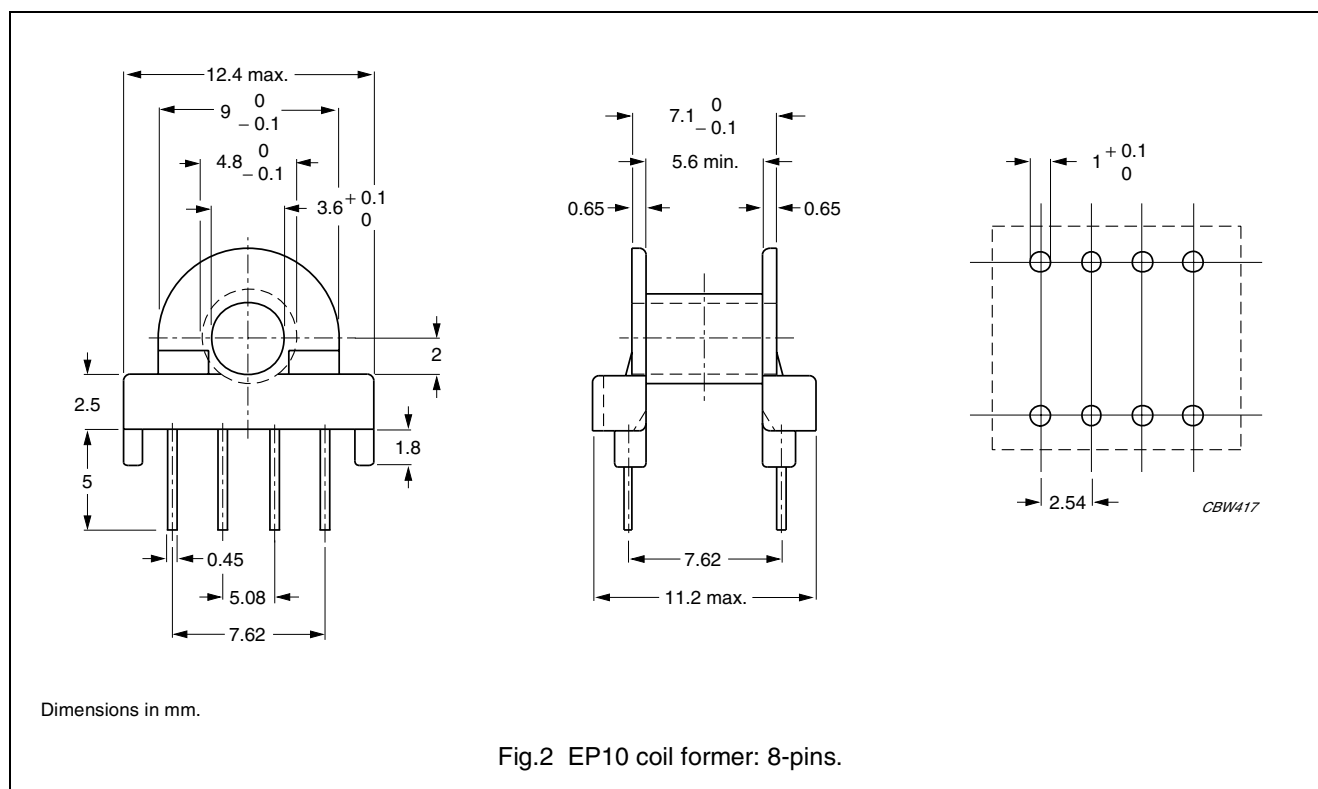
GRADE	B (mT) at	CORE LOSS (W) at			
	H = 250 A/m; f = 25 kHz; T = 100 °C	f = 500 kHz; $\hat{B}$ = 50 mT; T = 100 °C	f = 500 kHz; $\hat{B}$ = 100 mT; T = 100 °C	f = 1 MHz; $\hat{B}$ = 30 mT; T = 100 °C	f = 3 MHz; $\hat{B}$ = 10 mT; T = 100 °C
3C96	≥340	≤ 0.07	–	–	–
3F35	≥300	≤ 0.025	≤ 0.2	–	–
3F3	≥315	–	–	–	–

Note

1. Measured at 60 °C.

COIL FORMER**General data CSH-EP10-1S-8P**

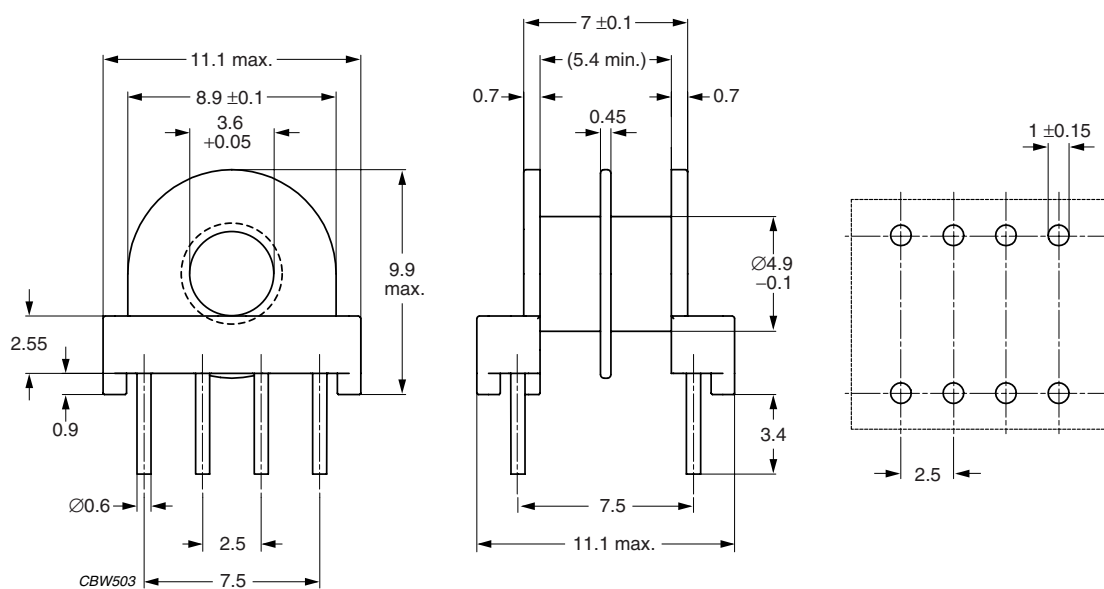
PARAMETER	SPECIFICATION
Coil former material	phenolformaldehyde (PF), glass-reinforced, flame retardant in accordance with "UL 94V-0"; UL file number E41429(M)
Pin material	copper clad steel, tin (Sn) plated
Maximum operating temperature	180 °C, "IEC 60085", class H
Resistance to soldering heat	"IEC 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 8-pins EP10 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	11.4	5.6	21.5	129	CSH-EP10-1S-8P

General data CSH-EP10-2S-8P

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	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.

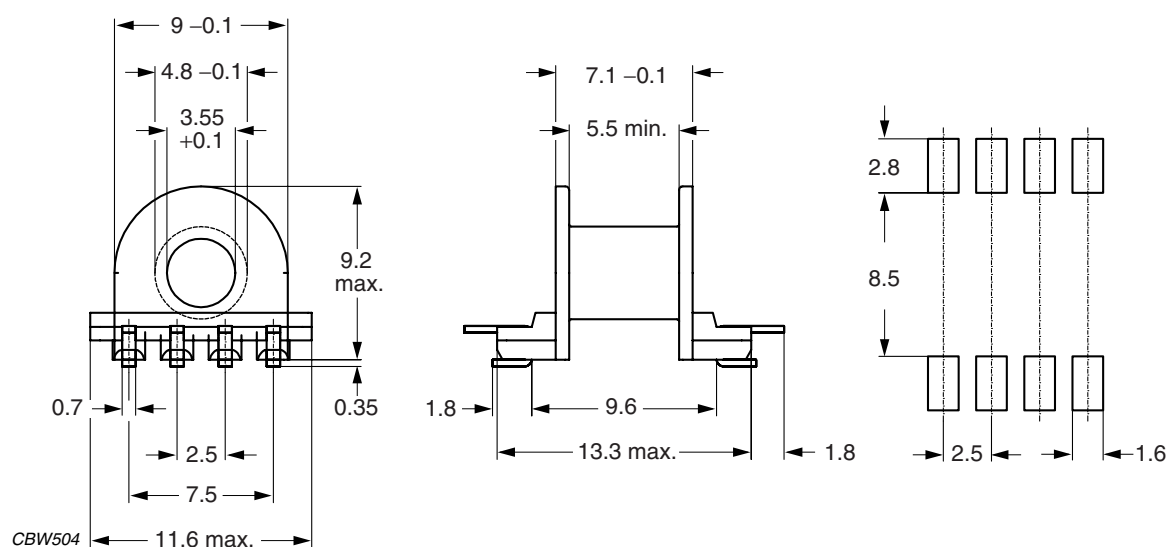
Fig.3 EP10 coil former.

Winding data and area product for EP10 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
2	2 × 4.8	2 × 2.6	21.6	2 x 54.2	CSH-EP10-2S-8P

General data CSHS-EP10-1S-8P-T

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	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 EP10 coil former.

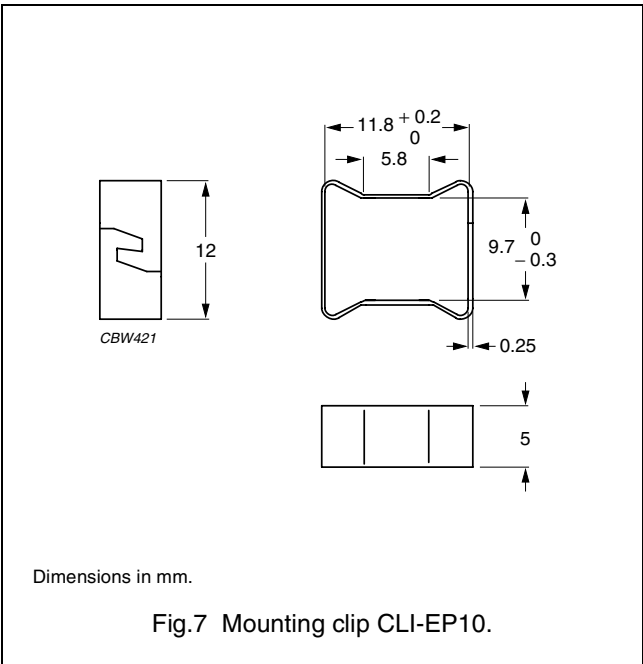
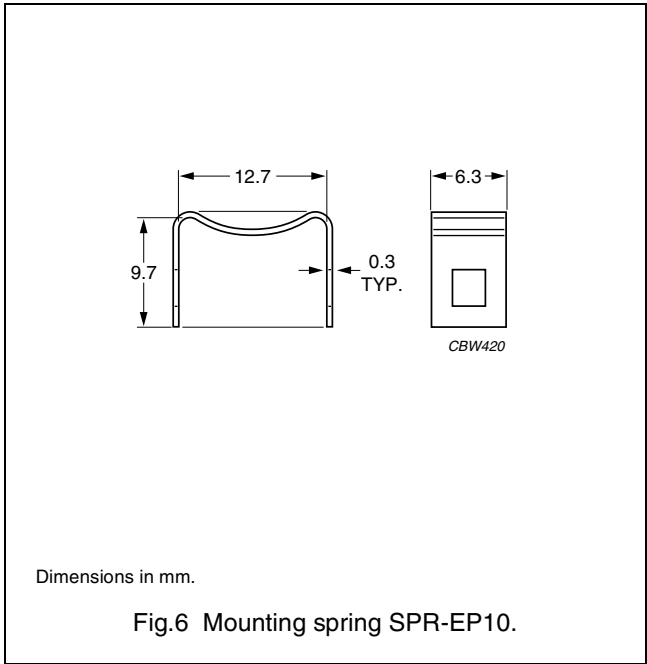
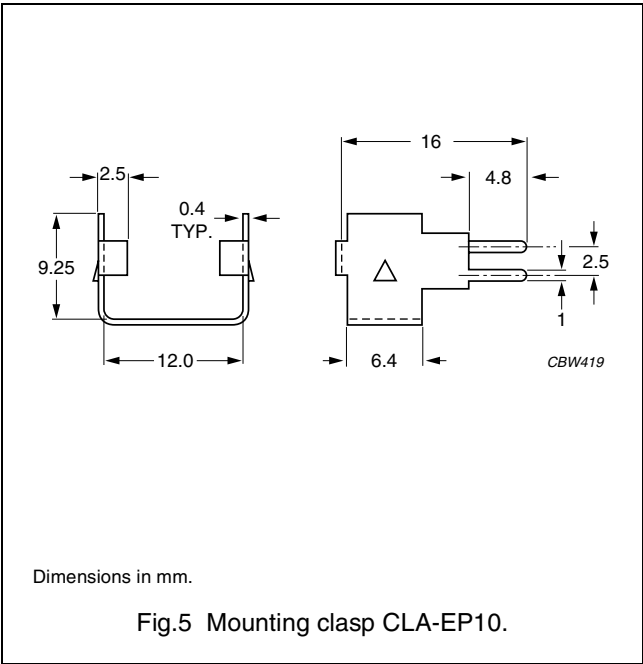
Winding data and area product for EP10 coil former

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	11.3	5.5	21.5	128	CSHS-EP10-1S-8P-T

MOUNTING PARTS

General data

ITEM	REMARKS	FIGURE	TYPE NUMBER
Clasp	copper-nickel-zinc alloy (nickel silver)	5	CLA-EP10
Spring	copper-nickel-zinc alloy (nickel silver)	6	SPR-EP10
Clip	stainless steel (CrNi); clamping force ≈ 27 N	7	CLI-EP10



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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.

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