

DATA SHEET

EP10

EP cores and accessories

Product specification
Supersedes data of November 1997
File under Ferrite Ceramics, MA01

1999 Dec 23

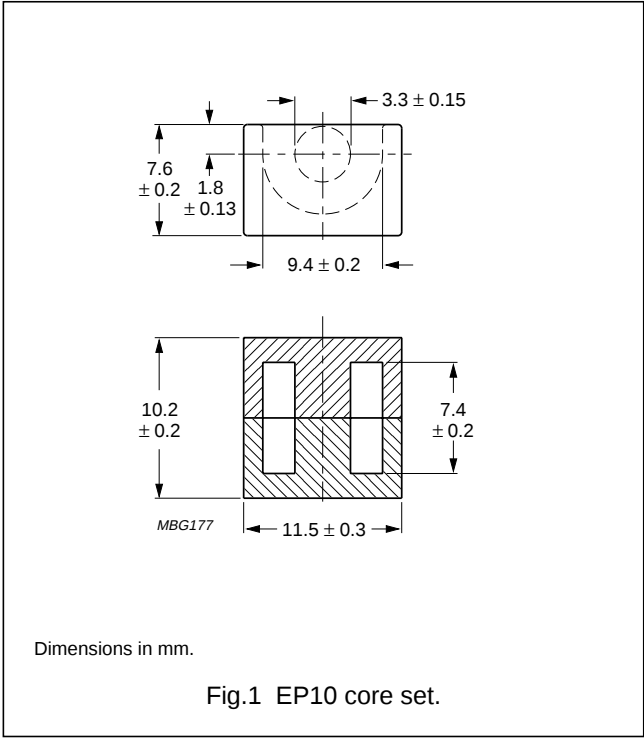
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CORE SETS

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	≈ 1.1	g



Core sets for general purpose transformers and power applications

Clamping force for A_L measurements, 30 ± 10 N.

GRADE	A_L (nH)	μ_e	AIR GAP (μm)	TYPE NUMBER
3C81	$25 \pm 3\%$	≈ 34	≈ 870	EP10-3C81-E25
	$40 \pm 3\%$	≈ 54	≈ 480	EP10-3C81-A40
	$63 \pm 3\%$	≈ 85	≈ 280	EP10-3C81-A63
	$100 \pm 3\%$	≈ 135	≈ 160	EP10-3C81-A100
	$160 \pm 5\%$	≈ 216	≈ 90	EP10-3C81-A160
	≥ 900	≥ 1210	≈ 0	EP10-3C81
3C90	$25 \pm 3\%$	≈ 34	≈ 870	EP10-3C90-E25
	$40 \pm 3\%$	≈ 54	≈ 480	EP10-3C90-A40
	$63 \pm 3\%$	≈ 85	≈ 280	EP10-3C90-A63
	$100 \pm 3\%$	≈ 135	≈ 160	EP10-3C90-A100
	$160 \pm 5\%$	≈ 216	≈ 90	EP10-3C90-A160
	$1140 \pm 25\%$	≈ 1530	≈ 0	EP10-3C90
3C91 	≥ 900	≥ 1210	≈ 0	EP10-3C91

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GRADE	A_L (nH)	μ_e	AIR GAP (μm)	TYPE NUMBER
3C94 	25 $\pm 3\%$	≈ 34	≈ 870	EP10-3C94-E25
	40 $\pm 3\%$	≈ 54	≈ 480	EP10-3C94-A40
	63 $\pm 3\%$	≈ 85	≈ 280	EP10-3C94-A63
	100 $\pm 3\%$	≈ 135	≈ 160	EP10-3C94-A100
	160 $\pm 5\%$	≈ 216	≈ 90	EP10-3C94-A160
	1140 $\pm 25\%$	≈ 1530	≈ 0	EP10-3C94
3C96 	1025 $\pm 25\%$	≈ 1380	≈ 0	EP10-3C96
3D3	40 $\pm 3\%$	≈ 54	≈ 480	EP10-3D3-A40
	63 $\pm 3\%$	≈ 85	≈ 280	EP10-3D3-A63
	100 $\pm 3\%$	≈ 135	≈ 160	EP10-3D3-A100
	470 $\pm 5\%$	≈ 635	≈ 0	EP10-3D3-A470
3F3	25 $\pm 3\%$	≈ 34	≈ 870	EP10-3F3-E25
	40 $\pm 3\%$	≈ 54	≈ 480	EP10-3F3-A40
	63 $\pm 3\%$	≈ 85	≈ 280	EP10-3F3-A63
	100 $\pm 3\%$	≈ 135	≈ 160	EP10-3F3-A100
	160 $\pm 5\%$	≈ 216	≈ 90	EP10-3F3-A160
	1000 $\pm 25\%$	≈ 1350	≈ 0	EP10-3F3
3F35 	800 $\pm 25\%$	≈ 1080	≈ 0	EP10-3F35
3F4	63 $\pm 3\%$	≈ 85	≈ 280	EP10-3F4-A63
	100 $\pm 3\%$	≈ 135	≈ 160	EP10-3F4-A100
	160 $\pm 5\%$	≈ 216	≈ 90	EP10-3F4-A160
	560 $\pm 25\%$	≈ 760	≈ 0	EP10-3F4
3H3	40 $\pm 3\%$	≈ 54	≈ 480	EP10-3H3-A40
	63 $\pm 3\%$	≈ 85	≈ 280	EP10-3H3-A63
	100 $\pm 3\%$	≈ 135	≈ 160	EP10-3H3-A100
	160 $\pm 5\%$	≈ 216	≈ 90	EP10-3H3-A160
	1025 $\pm 25\%$	≈ 1390	≈ 0	EP10-3H3

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
3E1 	2000 $+30/-20\%$	≈ 2700	≈ 0	EP10-3E1
3E4 	3200 $+40/-30\%$	≈ 4300	≈ 0	EP10-3E4
3E27	≥ 2500	≥ 3370	≈ 0	EP10-3E27
3E5	4800 $+40/-30\%$	≈ 6500	≈ 0	EP10-3E5
3E6	6900 $+40/-30\%$	≈ 9340	≈ 0	EP10-3E6

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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	≥315	≤0.043	–	–	–
3C90	≥320	≤0.024	≈0.024	–	–
3C91	≥315	≈0.022	≈0.022	–	–
3C94	≥320	–	≤0.019	≈0.093	≈0.043
3C96	≥320	–	≈0.014	≈0.065	≈0.030
3F35	≥300	–	–	–	≈0.022
3F3	≥315	–	≤0.025	–	≤0.045
3F4	≥250	–	–	–	–

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	–	–	–	–
3C90	≥320	–	–	–	–
3C91	≥315	–	–	–	–
3C94	≥320	–	–	–	–
3C96	≥320	–	–	–	–
3F35	≥300	≈0.035	≈0.26	–	–
3F3	≥315	–	–	–	–
3F4	≥250	–	–	≤0.043	≤0.069

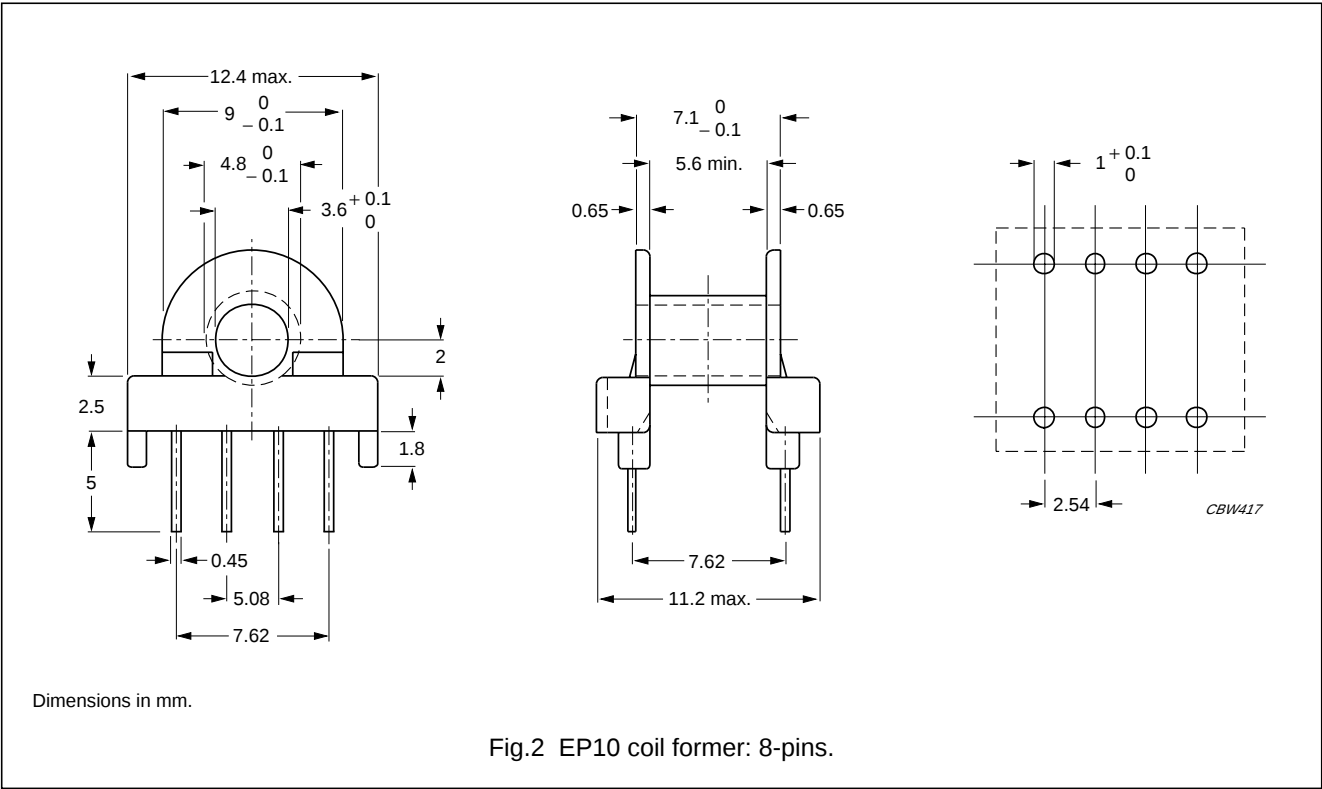
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COIL FORMER

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 E46770(M)
Pin material	copper clad steel, tin-lead alloy (SnPb) 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 for 8-pins EP10 coil former

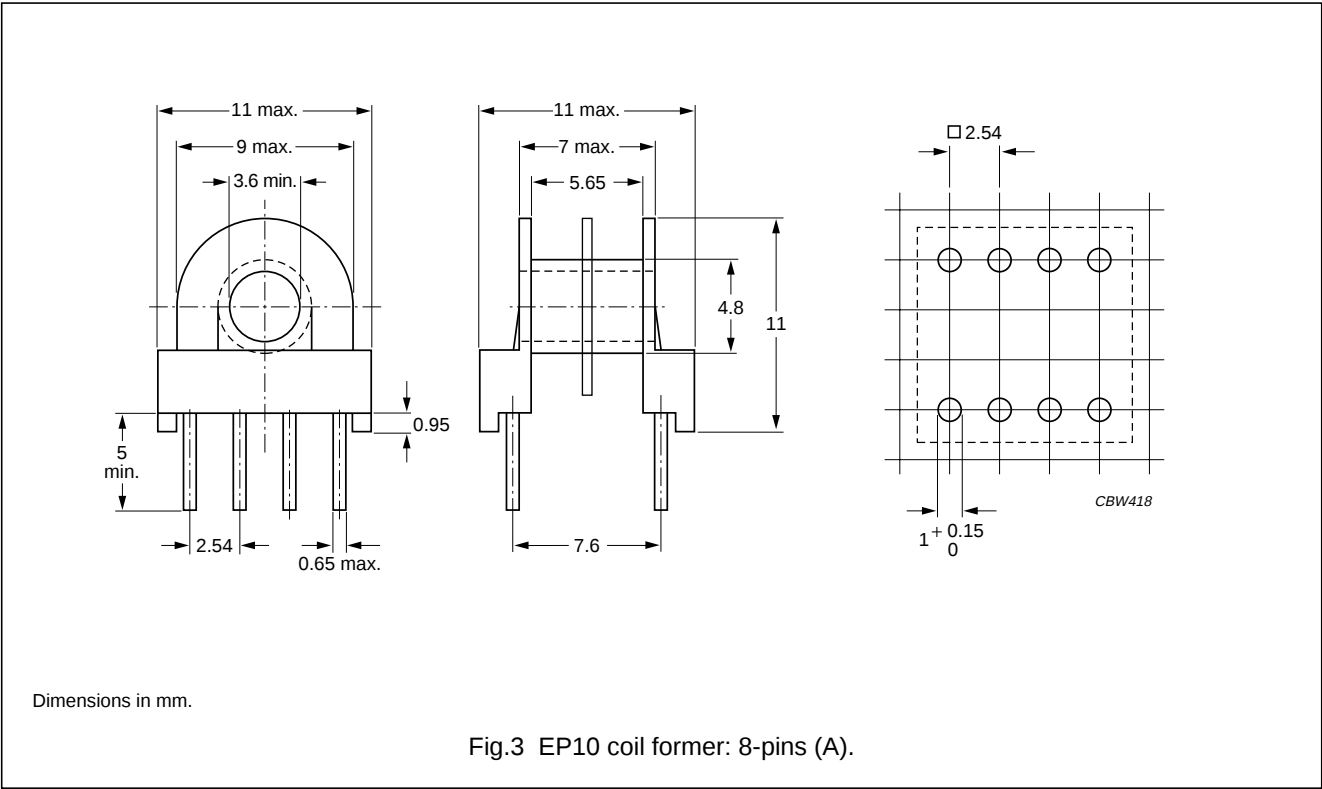
NUMBER OF SECTIONS	WINDING AREA (mm ²)	MINIMUM WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	TYPE NUMBER
1	11.4	5.6	21.5	CSH-EP10-1S-8P

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General data CSH-EP10-1S-8P-A

PARAMETER	SPECIFICATION
Coil former material	phenolformaldehyde (PF), glass-reinforced, flame retardant in accordance with "UL 94V-0"; UL file number E46770(M)
Pin material	copper-tin alloy (CuSn), tin-lead alloy (SnPb) 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 for 8-pins EP10 coil former

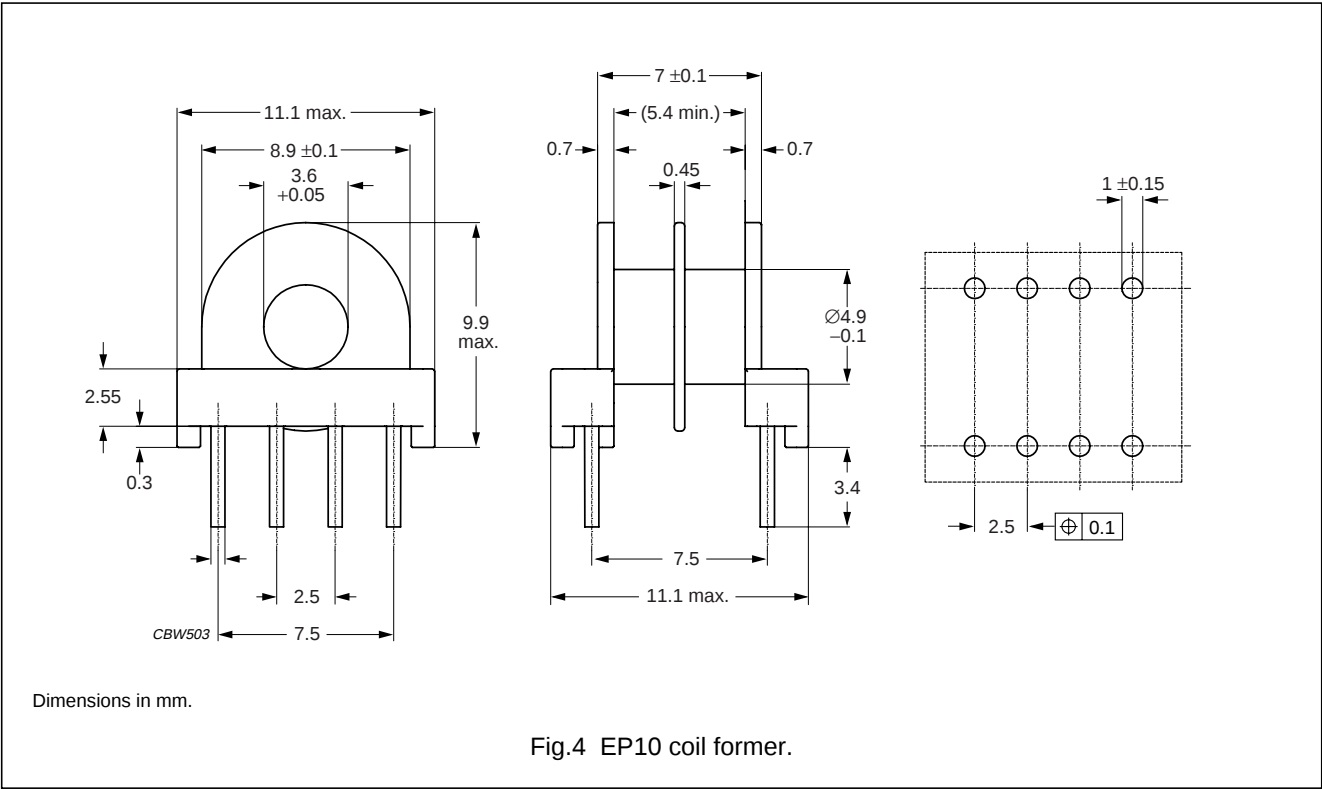
NUMBER OF SECTIONS	MINIMUM WINDING AREA (mm ²)	NOMINAL WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	TYPE NUMBER
2	2 × 4.77	2 × 2.6	21.5	CSH-EP10-2S-8P-A

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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-lead alloy (SnPb) 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



Winding data for EP10 coil former

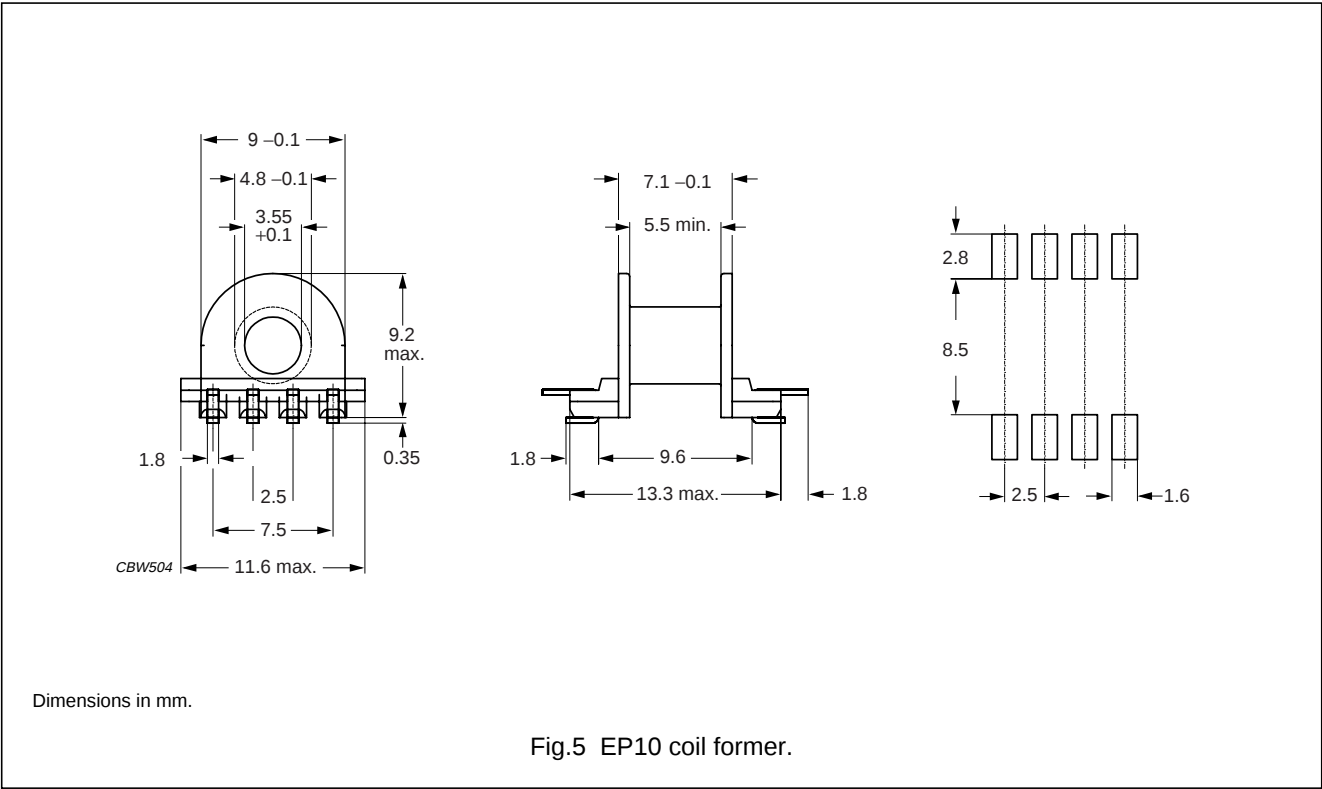
NUMBER OF SECTIONS	MINIMUM WINDING AREA (mm ²)	NOMINAL WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	TYPE NUMBER
2	9.6	5.4	21.6	CSH-EP10-2S-8P

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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-lead alloy (SnPb) 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



Winding data for EP10 coil former

NUMBER OF SECTIONS	MINIMUM WINDING AREA (mm ²)	NOMINAL WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	TYPE NUMBER
1	11.3	5.5	21.5	CSHS-EP10-1S-8P-T

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MOUNTING PARTS

General data

ITEM	REMARKS	FIGURE	TYPE NUMBER
Clasp	copper-nickel-zinc alloy (nickel silver)	6	CLA-EP10
Spring	copper-nickel-zinc alloy (nickel silver)	7	SPR-EP10
Clip	stainless steel (CrNi); clamping force ≈ 27 N	8	CLI-EP10

